Yale & Towne Manufacturing Co.

YALE

MATERIAL HANDLING EQUIPMENT

Catalog No. 21-M

The Yale & Towne Manufacturing Co.
Stamford, Conn., U. S. A.

TRADE YALE MARK

Stamford Works
1923
Area 25 Acres-Number of Buildings 68

Stamford Works
1870

Shelburne Falls Works
1860

Original Works
Newport, N.Y.
1840

Canadian Works 1923
Canadian Yale & Towne Limited
St. Catharines, Ontario

TRADE YALE MARK

241

Material Handling Equipment

Catalog No. 21-M

YALE MADE IS YALE MARKED

The Yale & Towne Manufacturing Company
Stamford, Conn., U. S. A.

13115

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Enable chain blocks and electric hoists to be of service over a greater area.

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For general utility purposes. Four-wheel steer. Platform 38 in. wide. Capacity 4,000 lbs.

WIDE HIGH-PLATFORM TRUCK—MODEL K21 90–91
Same as the K20, but with platform 46 ins. wide.

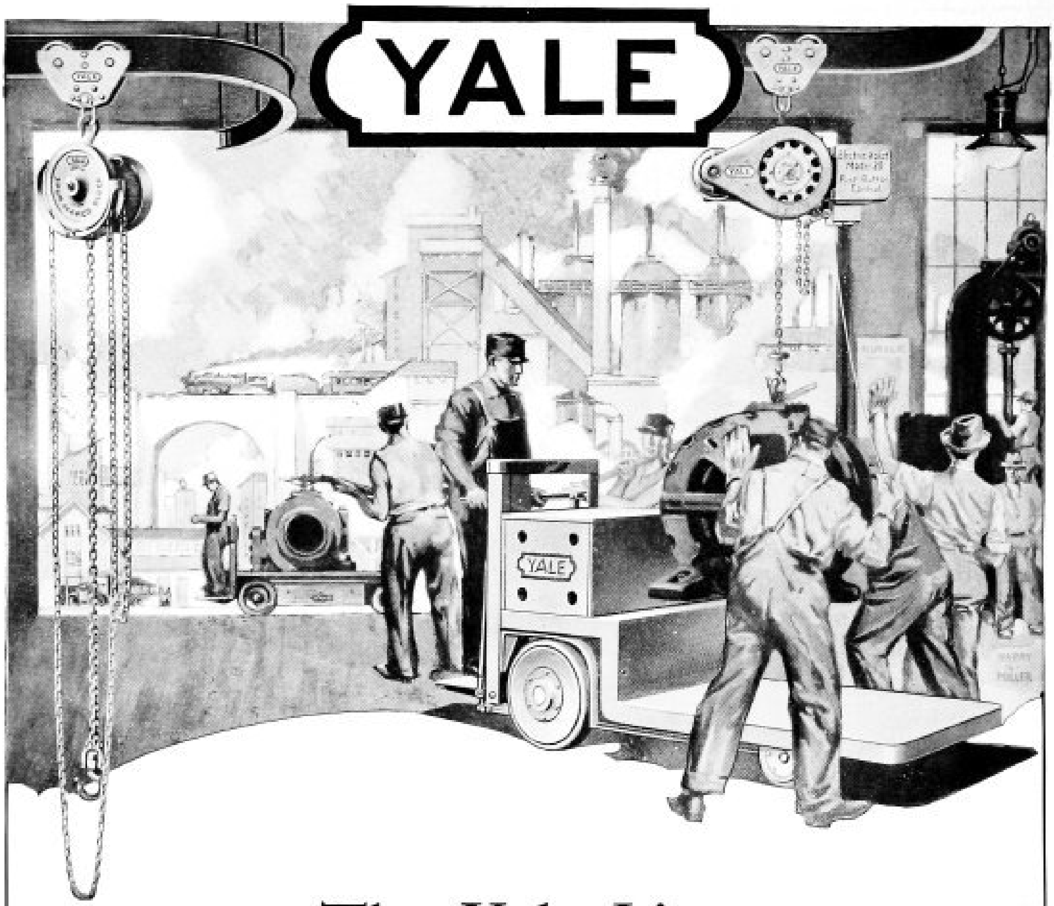
ELEVATING PLATFORM TRUCK—MODEL K22 92–93
For high and low lifts. Four-wheel steer. Capacity 4,000 lbs.

NARROW LOW PLATFORM TRUCK—MODEL K23 94–95
Reduces lifting to a minimum. Four-wheel steer. Platform 38 ins. wide. Capacity 4,000 lbs.

THREE WHEEL TRACTOR-TRUCK—MODEL K24 96–97
Flat platform. Passes a 3 ft. doorway or a 7 ft. elevator. Capacity as tractor, draw bar pull 300 lbs. normal, 1,800 lbs. maximum. Capacity as load carrying truck, 3,000 lbs.

TRAILER—MODEL C-6-36 98–99
Four wheel steer. Capacity 4,000 lbs. A train of these trailers will track perfectly.

AUXILIARY TRUCK AND TRAILER EQUIPMENT 100
Detachable end- and side-dump bodies, for various purposes; also power cranes, for mounting on models K20, K21 and K23 trucks.



The Yale Line
of
Equipment for Handling Materials

THIS Catalog is presented as a reference book for the use of the engineer, the plant superintendent, the architect, and the purchasing agent, as well as the salesman.

It contains complete details of Yale Chain Blocks, Trolleys and Electric Chain Hoists and shows tables of dimensions, weights, clearances, and lifting, lowering and running speeds, and covers all essential information regarding each of these units of Yale equipment for handling materials.

The Yale Industrial Truck Catalog containing complete data on the construction and use of Yale Trucks, Tractors and Trailers will gladly be sent upon request.

Among the Yale Units described in detail may be found, either singly or in combination, practically every means necessary for the safe, expeditious and economical *intraplant handling* of materials and products.

Chain Blocks

A discussion of the comparative efficiencies of three types of Chain Blocks

by

HENRY R. TOWNE

◆

"CHAIN BLOCK" is the term long employed to designate a portable hoisting device, comprising a chain and sheaves, which automatically holds its load suspended.

There are three types of Chain Blocks in use today, designated respectively as the "Differential," the "Screw-Geared" and the "Spur-Geared." These types differ widely in characteristics, but each has its special field of usefulness. Approximately the average prices of these three types are in the ratio of 1: 2: 3, but the selection of the *cheapest for a given purpose* depends upon the conditions of the intended use, as indicated below.

Mechanical Efficiency

The "mechanical efficiency" of a hoisting machine is the percentage of power applied which results in work done. The "work done" is a composite of weight, distance and time. A load of 500 pounds, lifted 2 feet, represents 1,000 foot-pounds of "work done," as does also a load of 1,000 pounds, lifted 1 foot. But time is also a factor in measuring "work done." For example, the lifting of a load of 1 ton 2 feet in 1 minute, and the lifting of a load of 2 tons 1 foot in 1 minute, both represent the same amount of "work done," namely —*2 foot-tons per minute*. In any machine part of the power applied is lost or absorbed by friction, and only the remainder represents "work done." For example, if a man exerts a pull on a chain or rope of 50 pounds, and moves it 10 feet, he applies 500 foot-pounds of effort, and if in so doing he lifted a load of 500 pounds, 1 foot, he would have effected 500 foot-pounds of "work done." If, however, the load lifted 1 foot was only 250 pounds, the "work done" would be only 250 foot-pounds, the other 250 foot-pounds of applied effort having been absorbed by the friction of the machine. In this case the "mechanical efficiency" of the machine would be fifty per cent (50%).

As a matter of fact, the "mechanical efficiency" of Chain Blocks ranges from as low as *twenty per cent* (20%) to as high as *eighty per cent* (80%), and thus becomes a vital factor in determining the choice of type.

A Chain Block intended only for occasional use, say, for repairs in an engine room, serves its purpose well if it will lift its maximum load, regardless of the number of men required or time needed to raise the load to the desired height, and therefore the cheapest type of block may properly be chosen; but if the Chain Block is intended for use over an expensive lathe, in placing and removing the work, the number of men and the length of time needed to lift the load become factors of chief importance, especially as the lathe stands idle during the time required for moving the work. In this case, the Chain Block having the *highest mechanical efficiency*, although the highest in price, becomes the cheapest in use. Chain Blocks are used under an infinite variety of conditions, and the selection of the best type depends on an intelligent understanding of the qualities of the several types, and on the conditions presented in each given case.

The Thurston Test

The Spur-Geared type of Chain Block was originated (about 1890) by The Yale & Towne Manufacturing Company, and marked such a great advance in portable hoists that arrangements were made to have comparative tests conducted by Professor R. H. Thurston, then of the Stevens Institute of Technology, and later of Sibley College, Cornell University. For this purpose Professor Thurston bought, in the open market, a Yale Differential Block, a Yale Spur-Geared Block, and six other competitive blocks which were then on the market, all of 1-ton capacity. The tests were conducted to determine the relative "efficiencies" of the several blocks, and the results were as shown in the table below (the competitive blocks being designated by numbers instead of by names).

Referring to the results of these tests, Professor Thurston writes:

THURSTON'S TESTS OF CHAIN BLOCKS

Comparative Efficiencies of Blocks, Both in Hoisting and Lowering

Work of *Hoisting* Load of 2000 Pounds			NUMBERS	Work of *Lowering* Load of 2000 Pounds Lowered 7 Feet	
Actual Efficiency Per Cent	Relative Efficiency	Velocity Ratio	Blocks All 1-Ton Capacity	Time in Minutes	Relative Efficiency
79.50	1.00	32.50	1 (Yale Spur-Geared Block)	0.75	1.000
32.00	.40	62.44	2	1.26	.186
31.00	.39	30.00	3 (Yale Differential)	1.50	.050
28.80	.36	28.00	4	2.50	.035
26.04	.33	48.00	5	2.80	.380
24.34	.31	53.00	6	1.80	.036
23.00	.29	44.30	7	2.75	.029
18.97	.24	61.00	8	3.75	.018

"The foregoing figures indicate fairly the relative efficiencies of the several blocks, and show that the Yale Spur-Geared Block excels all its predecessors to a remarkable extent. The secret of its excellence lies in the fact that, while in other blocks a wasteful friction is chiefly relied upon to prevent the load once raised from running down, the Spur-Geared Block is designed with a view of reducing the lost work of friction, both in hoisting and in lowering, to a minimum, and of obtaining the highest mechanical efficiency; a new and independent device being introduced to control the action of lowering, this device causing no friction in hoisting, and being perfectly reliable and effective for its intended purpose during the act of lowering."

Recent Comparative Tests

Since that time, more than thirty years ago, The Yale & Towne Manufacturing Company has sought continuously, by study, experiments, and experience, to improve the design and construction of its Spur-Geared Blocks, and thus has led the way in all improvements in this field. It is a tribute to the original design that most of the competitive Spur-Geared Blocks now on the market are copies of the original Yale Spur-Geared Block.

Recent comparative tests of the efficiencies of the various Spur-Geared Blocks now on the market, while not disclosing any such startling differences as obtained at the time of Professor Thurston's investigation, nevertheless are interesting, and merit the consideration of the intelligent and careful purchaser. (See table below. The blocks other than Yale are designated by letters.)

1-Ton Spur-Geared Chain Blocks—Recent Data and Comparative Tests

	Yale	A	B	C	D	E	F	G	H	I
Tested Efficiency...	79%	77%	72%	71%	71%	68.7%	70%	72%	73%	75%
Hoisting Pull—Full Load—Pounds...	82	84	89	91	84	104	85	88	85	100
Lowering Pull—Full Load—Pounds...	15	16	32	33	20	28	7	11	39	18
Velocity—Ratio of Chains..........	31+	31.3	31.5	31+	33.5	28	33	31.6	32	26.6
Gear Ratio........	10.23	10.23	10.23	10.23	10.23	10.33	13.2	10.55	13.78	9.44
Net Weight of Block—Pounds........	92	91	92	80	101	104	95	90	94	84
Load Chain-Elastic Limit—Pounds...	6200	3800	4600	3000	5000	3850	2100	3000	2370	5070
Load Chain-Factor of Stretch........	3.1	1.9	2.3	1.5	2.5	1.92	1.05	1.5	1.18	2.5
Load Chain-Ultimate Strength—Pounds..........	13000	8100	7300	5870	11080	10070	8400	7000	7500	10620
Load Chain-Factor of Safety.........	6.5	4	3.65	2.93	5.9	5.0	4.2	3.5	3.75	5.3
Hand Chain-Elastic Limit—Pounds...	1500	.....	.....	.....	.....	275	.....	.....	.....	.....
Hand Chain-Ultimate Strength—Pounds..........	3000	.....	.....	.....	.....	540	.....	.....	.....	.....

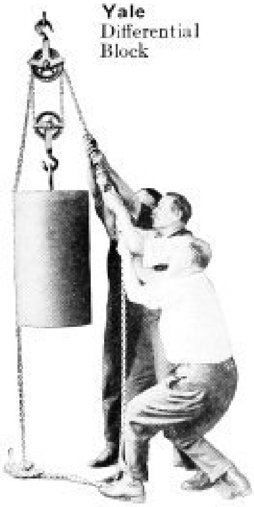


Fig. 1

3 Men
1 minute, 3 seconds

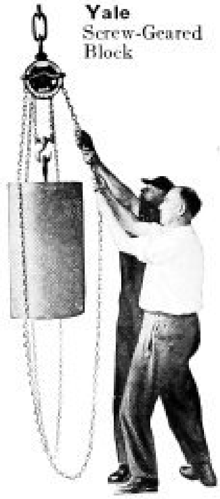


Fig. 2

2 Men
1 minute, 7 seconds

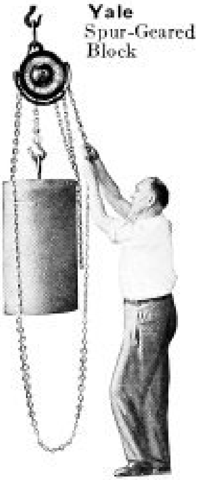


Fig. 3

1 Man
45 seconds

Lifting 1 Ton 3 Feet

The Three Types of Yale Chain Blocks

THE illustrations on this page show the *time* and the *number of men* of average strength required to lift a load of 1 ton (2,000 pounds) 3 feet high, using the 3 types of Yale Chain Blocks. One ton blocks were used in making each of these tests and the facts compiled have been carefully checked.

The Differential Block

This type is lowest in first cost, but also lowest in efficiency. It is suitable in places where the use is only occasional, where extra help is available if needed, and where economy of time is not important. It has long been a favorite in garages, both public and private. The load is held suspended by reason of the friction of the parts of the Block.

The Screw-Geared Block

The cost of this Block is about double that of the Differential Block, but its efficiency is one-third greater. Its action is very smooth, thus adapting it for use where any jarring of the load is to be avoided (as in lifting foundry flasks), and it stands midway in cost, efficiency, and general usefulness, between the other two types. The load is held suspended by reason of the friction of the parts of the Block.

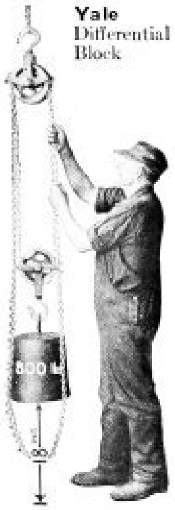


Fig. 4
Differential Block
Lifts 800 lbs., 18 in.

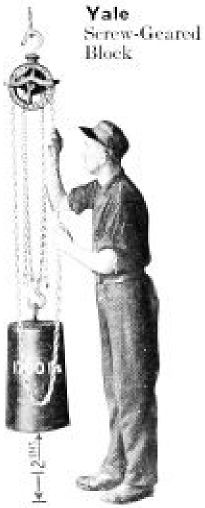


Fig. 5
Screw-Geared Block
Lifts 1,700 lbs., 12 in.

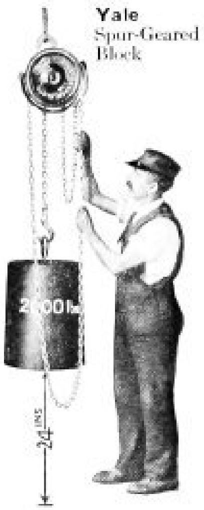


Fig. 6
Spur-Geared Block
Lifts 2,000 lbs., 24 in.

Relative Efficiency of the Three Types of Chain Blocks

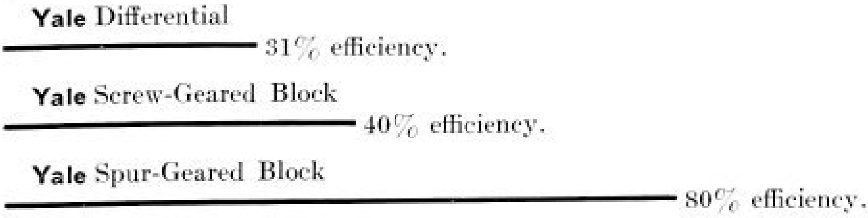
One man using 82 lb. pull for ½ minute

The Spur-Geared Block

The cost of this is about three times that of the Differential, and one-half more than that of the Screw-Geared Block, but its efficiency is nearly three times that of the former, and double that of the latter, thus making it not only the best but the *cheapest where the use is frequent*, and where the saving of the time of men and machines is important. The load is held suspended by an automatic brake, not by excessive friction. It represents the highest development in hand-hoisting machines.

Graphical Comparison

The "mechanical efficiency" developed by each type of Chain Block, that is, the percentage of power applied which results in "work done" (the remainder being absorbed by friction), is shown by the graphical comparison below:



An Example

The practical application of the foregoing facts can best be presented by an example. For this purpose, we will take the case of a machine-shop using a lathe on work which, including placing and removal, requires about 15 minutes, thus making 4 operations per hour, the load weighing 2,000 pounds and having to be lifted 3 feet. In this case we obtain the results shown in the table given below.

Assuming the labor to cost 60¢ per hour, or 1¢ per minute, the cost with the Differential Block (3 men 1 minute and 3 seconds) is 3-1/6¢ per operation, and with the Spur-Geared Block (1 man 3/4 of a minute) 3/4¢ per operation. This saving of 2-5/12¢ per operation, with 4 operations per hour, amounts to 9-2/3¢ per hour, or 77⅓¢ per day, and to $232.00 in a year of 300 days. The greater cost of the Spur-Geared Block over the Differential Block is $40.00, thus leaving a *clear profit* for the year of $192.00. The difference in cost between the 2 Blocks would be paid for in *52 days* by the saving in labor cost.

Similar results, varying only in degree, will obtain in all cases where the use of a Chain Block is frequent, and where the saving of the time of men and machines means increased economy and reduced costs.

It is an axiom in many industrial establishments that any new machine must be purchased, no matter what it costs, which will pay for itself within 1 year by the saving it effects in time and labor. In numberless cases a Chain Block, properly selected, has paid for itself within a few months.

On the following page are tables which show the hoisting speeds and the number of men required for lifting various loads with Yale Chain Blocks of the various rated capacities, and of the 3 types above described.

Henry R. Towne.

	Differential	Screw-Geared	Spur-Geared
Cost of Block (approximate)	$20.00	$40.00	$60.00
Pull on Hand Chain—2,000 lb. load	216 lbs.	87 lbs.	82 lbs.
Number of Men Needed—2,000 lb. load	3	2	1
Time in Minutes—to raise 2,000 lbs. 3 ft.	1 min. 3 sec.	1 min. 7 sec.	45 sec.
Cost per Operation	3 1/6 cents	2 7/30 cents	3/4 cent

Hand Chain Pulls, etc., for Yale Chain Blocks

Rated Capacity in Tons	Pull in Pounds on Hand Chain to Lift Capacity Loads-2000 Lbs. to Ton			Feet of Hand Chain Over-Hauled to Lift the Load One Foot			Load One Man Lifts With Pull of 80 Pounds		
	Spur-Geared	Screw-Geared	Differential	Spur-Geared	Screw-Geared	Differential	Spur-Geared	Screw-Geared	Differential
¼	50	...	72	12½	...	18	500	.....	500
½	62	68	122	21	40	24	1000	1000	600
½†	90	...	...	14	...	..	900	.....	....
1	82	87	216	31	59	30	2000	1700	800
1½	110	94	246	35	80	36	2300	2500	1000
2	120	115	308	42	93	42	2600	2700	1100
3	114	132	557	70	126	38	4000	3300	1000
4	124	142	...	84	155	..	5000	4600	....
5	110	145	...	126	195	..	6500	5300	....
6	130	145	...	126	252	..	7000	6500	....
8	135	160	...	168	310	..	9000	7800	....
10	140	160	...	210	390	..	11000	10000	....
12	130*	....	....	126*	....	..	13000	.....	....
16	135*	....	....	168*	....	..	17000	.....	....
20	140*	....	....	210*	....	..	20000	.....	....

*For each hand chain. †Special "Quick Speed" Block.

Hoisting Speeds for Yale Chain Blocks

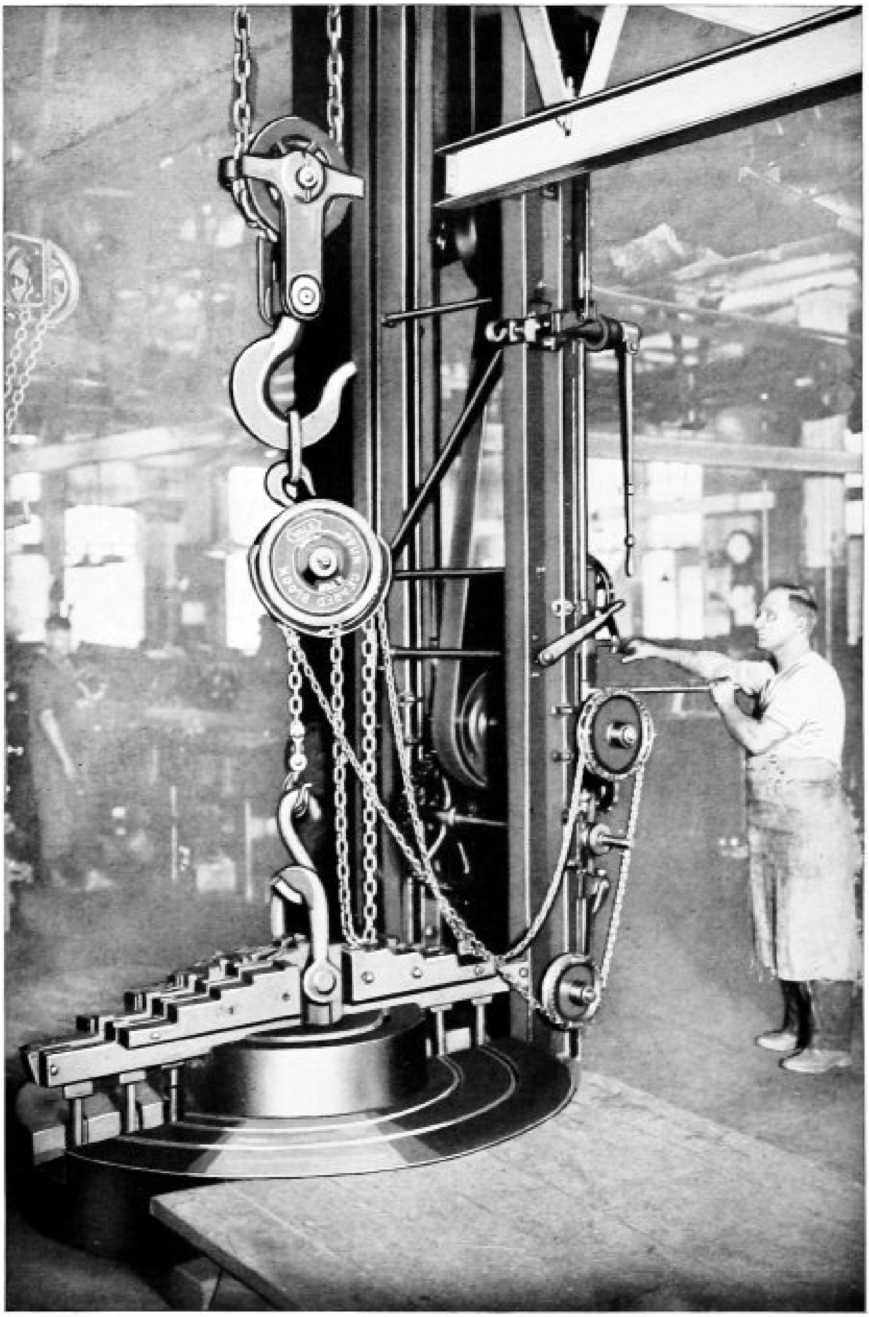
Rated Capacity in Tons	Feet per Minute Attainable and Number of Men Needed to Lift Capacity Loads Without Pulling Over 80 Pounds							
	Spur-Geared				Screw-Geared		Differential	
	Full Load	Half Load	Quarter Load	No. of Men *	Full Load	No. of Men *	Full Load	No. of Men *
¼	16	28	42	1	....	.	6	1
½	8	16	24	1	4	1	6	2
½†	8½	17	26	1	....	.	...	.
1	4	8	12	1	2	1	3.7	3
1½	4.8	9.6	14.4	2	2.4	2	2.5	3
2	3.6	7.2	10.8	2	1.8	2	2.3	4
3	2.3	4.6	6.9	2	1.1	2	2.3	7
4	1.7	3.5	5.2	2	.8	2	...	.
5	1.3	2.6	3.9	2	.65	2	...	.
6	1.1	2.2	3.3	2	.5	2	...	.
8	.8	1.6	2.4	2	.35	2	...	.
10	.6	1.2	1.8	2	.3	2	...	.
12	1.1	2.2	3.3	4	....	.	...	.
16	.8	1.6	2.4	4	....	.	...	.
20	.6	1.2	1.8	4	....	.	...	.

* No. of men is based on each man pulling not over 80 lbs. † Special "Quick Speed" Block.

These speeds are for short lifts with men accustomed to the work. For easy, continuous lifting, two-thirds of these speeds are attainable. The Yale Spur-Geared Block lifts rapidly and the speed increases for light loads because the amount of hand chain to be overhauled is small. The Yale Spur-Geared Block allows the load to be lowered very rapidly.

The 12, 16, and 20-ton Spur-Geared Blocks have 2 hand chains each, permitting 2 men to hoist simultaneously, thus securing double speed.

Figures above are based on a ton of 2000 lbs.



Testing Yale Spur-Geared Chain Blocks

YALE

Chain Blocks

FOR more than half a century The Yale & Towne Manufacturing Company has been building Chain Blocks, starting as the original pioneer and steadily growing until, today, it occupies the enviable position of being the largest maker of Chain Blocks in the world.

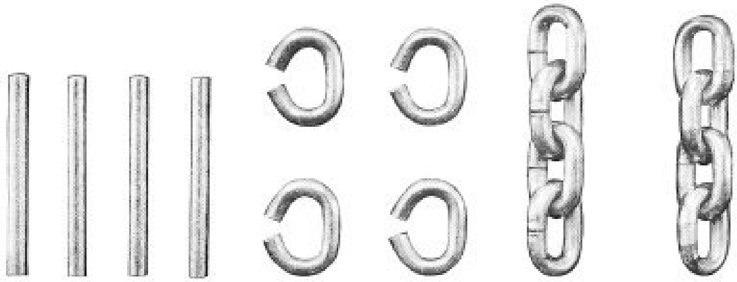
This is due largely to the guiding principle—honesty of purpose and of endeavor. Honesty in design and production; in representation, in pricing and in quality, —that high quality in materials and workmanship which characterizes all Yale products.

Today the Yale line of blocks includes a portable type for every possible industrial and commercial purpose—consisting of the Spur-Geared, Screw-Geared and Differential Chain Blocks and Electric Hoists.

This Company is equipped to furnish installations ranging from a single Chain Block to the largest and most complete systems for hoisting and moving materials. Your inquiries for information and estimates are invited.

The Yale & Towne Manufacturing Company is the only maker of Chain Blocks in the United States making every component part in its own plant, and therefore having control of the quality and workmanship from the raw material to the finished product.

Interesting booklets illustrating uses of Yale Chain Blocks in the foundry, garage, factory, etc., may be had upon request.



Yale Steel Load Chain

IT is not possible to over-emphasize the importance of the strength and durability of the chain used in any chain block. It is the most expensive single part of the block and is subjected to more abuse and wear than any other part.

With these considerations in mind this Company adopted the use of steel load chains many years ago, thus solving the problem of making chain blocks safe under all normal conditions of use.

After a long period of experimental work and exhaustive tests, a special design of steel load chain and sheave wheel was adopted. These tests, conducted over a period of five years, and in the course of which more than 125,000 feet of steel load chain were used, resulted in the design of a type of chain which insures the greatest degree of safety, endurance, and efficiency.

Samples of the newly designed steel load chain, taken at random from stock bins, were examined and tested by Lloyd's Proving House, England, with the certified results shown in the table below.

This special steel load chain is an exclusive feature of Yale Chain Blocks and Electric Chain Hoists. To maintain the Yale high standards of steel load chain manufacture, a careful system of examination was developed which necessitates 16 separate and distinct inspections and tests for each link. In the making of Yale Steel Load Chain, every step in the manufacturing process is controlled from the very beginning. The steel is subjected to complete chemical and physical laboratory analyses at the time it enters the plant and careful series of tests and inspections are made at various times until the steel is deposited as finished chain in the storage bins.

Each Yale Steel Load Chain link is die-formed to secure perfect uniformity of shape of the metal and to preserve the round, smooth contour of the stock.

Each link in a Yale Load Chain is electrically welded *on its side*, where it supports only half of the load. The friction of the links riding together over the load sheave comes at the ends of the links and not on the weld.

Chain so welded operates more freely over the sheave, does not wear rapidly, and is not easily kinked. Each link of Yale Load Chain is heat-treated and put through a special process which toughens the metal, increases its strength, and greatly prolongs its life.

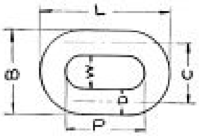
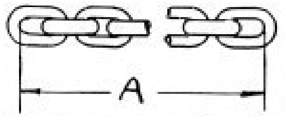
Finally, each foot of chain is subjected to a load test of 3 times its rated capacity before it is assembled in a block.

The number of inspections and tests to which Yale Steel Load Chain is subjected before actual use is an indication that it is as nearly perfect as human ingenuity and modern skill aided by science, long experience, and modern machinery can make it.

Dimensions of Stock	9/32 in.	3/8 in.	7/16 in.	1/2 in.
Rated Capacity	1/2 ton	1 ton	1 1/2 tons	2 tons
Elastic Limit	4409 lbs.	7173 lbs.	11023 lbs.	13787 lbs.
Ultimate Strength	6147 lbs.	13339 lbs.	17972 lbs.	22242 lbs.

YALE CHAIN BLOCKS

Dimensions of Standard Pitch Chains Used on Yale Chain Blocks, Double Lift Hoist and Electric Chain Hoists

D (diam. of bar)									Links per foot
In.	In.	P	L	B	W	C	Lbs. per ft.		
1/4	.259	1.046	1.546	.89	.37	.629	.563	For 20 Links A = 20.92	11.47
1/4	.250	.726	1.226	.76	.26	.51	.584	" 20 " " = 14.52	16.52
9/32	.281	.792	1.354	.86	.30	.58	.75	" 20 " " = 15.84	15.15
9/32	.281	.729	1.291	.87	.31	.59	.78	" 20 " " = 14.58	16.46
5/16	.312	.852	1.477	.96	.34	.65	.92	" 20 " " = 17.04	14.08
3/8	.375	1.010	1.760	1.17	.42	.80	1.35	" 20 " " = 20.20	11.88
3/8	.375	.945	1.695	1.16	.41	.79	1.39	" 20 " " = 18.90	12.69
7/16	.437	1.167	2.047	1.38	.50	.94	1.84	" 20 " " = 23.34	10.28
1/2	.500	1.437	2.437	1.58	.58	1.08	2.31	" 10 " " = 14.37	8.35
9/16	.562	1.706	2.831	1.80	.68	1.24	2.86	" 10 " " = 17.06	7.03
5/8	.625	1.875	3.125	2.00	.75	1.38	3.53	" 10 " " = 18.75	6.40

D (diam. of bar)		Capacity in Tons							
		Spur-Geared Blocks		Screw-Geared Blocks		Differential Blocks	Double Lift Hoist		Electric Chain Hoist
In.	In.	Hand Chain	Load Chain	Hand Chain	Load Chain		Hand Chain	Load Chain	Load Chain
1/4	.259	{1/4-1/2-1-1 1/2-2}		{1/2-1-1 1/2-2-3-5-6}					
1/4	.250				1/2	1/4-1/2		1/4	
9/32	.281		1/4-1/2	4-8-10	1				
9/32	.281					1		1/2	
5/16	.312				1 1/2	1 1/2		3/4	
3/8	.375		1		2				1/4-1/2
3/8	.375					2		1	
7/16	.437		1 1/2		3-6	3			
1/2	.500		2		4-8				1/2 q.s.*-1-2
9/16	.562				5-10				
5/8	.625								

*q.s. is used as abbreviation for "quick speed."

Sizes, Lengths, and Weights of Chain Used on Yale Chain Blocks

	Spur-Geared Blocks							Screw-Geared Blocks						Differential		
	Load Chain				†Hand Chain			‡Load Chain			§Hand Chain			‖Chain		
Capacity of Block in Tons	Size in Inches	Length in Feet	Total Weight in lbs.	For each ft. of extra hoist add	Size in Inches	Length in Feet	Total Weight in lbs.	Size in Inches	Length in Feet	Total Weight in lbs.	Size in Inches	Length in Feet	Total Weight in lbs.	Size in Inches	Length in Feet	Total Weight in lbs.
1/4	9/32	9	6.75	1 ft. chain	1/4	16	9.01							1/4	22	12.84
1/2	9/32	9	6.75	" "	1/4	16	9.01	1/4	18	10.51	1/4	16	9.01	1/4	26	15.18
1	3/8	9	12.15	" "	1/4	16	9.01	9/32	18	14.04	1/4	16	9.01	9/32 S.L.	30	22.50
1 1/2	7/16	9	16.56	" "	1/4	16	9.01	5/16	18	16.56	1/4	16	9.01	5/16	33	30.36
2	1/2	10	23.10	" "	1/4	18	10.13	3/8	20	27.80	1/4	18	10.13	3/8 S.L.	36	48.60
3	7/16	24	44.16	2 ft. chain	1/4	22	12.38	7/16	24	44.16	1/4	21	11.82	7/16	38	69.92
4	1/2	25	57.75	" "	1/4	24	13.51	1/2	24	55.44	9/32	21	15.75			
5	1/2	44	101.64	3 ft. chain	1/4	29	16.32	9/16	30	85.80	1/4	26	14.60			
6	1/2	44	101.64	" "	1/4	29	16.32	7/16	55	101.20	1/4	26	14.60			
8	1/2	58	133.98	4 ft. "	1/4	30	16.89	1/2	55	127.05	9/32	26	19.50			
10	1/2	72	166.32	5 ft. "	1/4	30	16.89	9/16	57	163.02	9/32	26	19.50			
12	1/2	93	214.83	6 ft. "	1/4	30	33.78*									
16	1/2	117	270.27	8 ft. "	1/4	30	33.78*									
20	1/2	146	337.26	10 ft. "	1/4	30	33.78*									

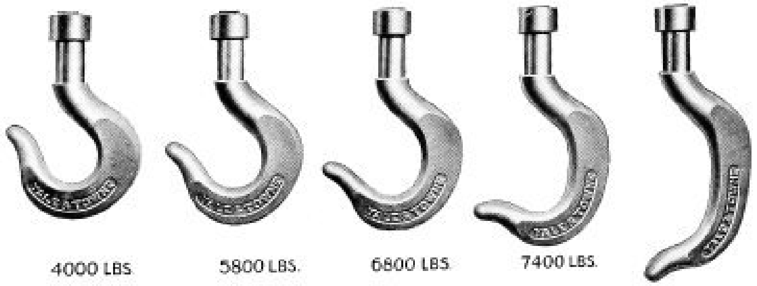
*Denotes two chains.

†For each foot of extra hoist, 1/4 to 10-ton inclusive, add 2 feet of chain; 12 to 20-ton inclusive, add 4 feet.

‡For each foot of extra hoist, 1/2 to 5-ton inclusive, add 2 feet of chain; 6 to 10-ton inclusive, add 4 feet.

§For each foot of extra hoist add 2 feet of chain.

‖For each foot of extra hoist add 4 feet of chain.



Yale Steel Safety Hooks

ALL Yale Chain Blocks are equipped with a "safety valve" which gives visible warning of danger whenever the Block is severely overloaded. This warning device is embodied in the Steel Safety Hook, drop-forged from a special steel which, when over-taxed, permits the hook to open slowly, without fracture, before any other part of the Block is strained.

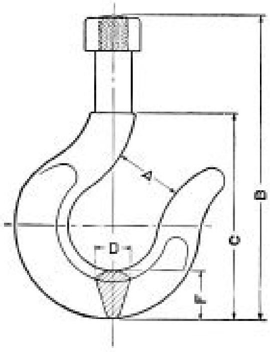


FIG. 7

In the illustration above, Nos. 1, 2, 3, and 4 show the effect of various loads imposed on a Yale 1-ton Steel Safety Hook. No. 4 was loaded to nearly 3½ times the rated capacity. A further increase in the load produced the condition shown in No. 5, where the hook slowly straightened *without fracture*.

No hook is constructed to carry its load on the tip and in order to get the maximum service from a hook, the load should always be suspended from the saddle of the hook.

Opened hooks and stretched load chains are invariably the result of abuse and neglect. The Yale Hook will stand 150 per cent load without changing the dimension "A" shown in the table below, provided the load is carried correctly in the center of hook and not on the tip.

Yale Chain Block Hooks—Dimensions and Weights

Capacity	Spur-Geared							Screw-Geared							Differential						
	Dimensions in Inches					Weight		Dimensions in Inches					Weight		Dimensions in Inches					Weight	
	A	B	C	D	F	Lbs.	Oz.	A	B	C	D	F	Lbs.	Oz.	A	B	C	D	F	Lbs.	Oz.
¼ Ton	1⅛	5 3/16	3 17/32	⅝	27/32		15								1	4 17/32	3 3/16	9/16	¾		10½
½ "	1⅛	5 3/16	3 17/32	⅝	27/32		15	1⅛	5 3/16	3 17/32	⅝	27/32		15	1⅛	5 3/16	3 17/32	⅝	27/32		15
1 "	1 5/16	6 17/32	4 5/16	⅞	1 3/16	2	2	1 5/16	6 17/32	4 5/16	⅞	1 3/16	2	2	1 5/16	6 17/32	4 5/16	⅞	1 3/16	2	2
1½ "	1⅝	7 17/32	4 15/16	1 1/16	1⅜	3	10	1⅝	7 17/32	4 15/16	1 1/16	1⅜	3	10	1⅝	7 17/32	4 15/16	1 1/16	1⅜	3	10
2 "	1⅞	8 9/16	5½	1 3/16	1½	5		1⅞	8 9/16	5½	1 3/16	1½	5		1⅞	8 9/16	5½	1 3/16	1½	5	
3 "	2⅛	10⅛	6 13/16	1½	1 15/16	9	12	2⅛	10⅛	6 13/16	1½	1 15/16	9	12	2⅛	10⅛	6 13/16	1½	1 15/16	9	12
4 "	2⅝	11 13/16	8	1 11/16	2¼	14	4	2⅛	10⅛	6 13/16	1½	1 15/16	9	12							
5 "	3	13⅝	9 3/16	1⅞	2½	21	4	2⅝	11 13/16	8	1 11/16	2¼	14	4							
6 "	3⅛	13⅝	9 3/16	1⅞	2½	21	4	3	13⅝	9 3/16	1⅞	2½	21	4							
8 "	3½	15	11⅜	2⅛	2 13/16	31		3⅛	13⅝	9 3/16	1⅞	2½	21	4							
10 "	4¼	18⅝	12⅝	2 7/16	3¼	50		4¼	17½	12⅝	2 7/16	3¼	50								
12 "	4½	18⅝	12⅝	2 7/16	3¼	50															
16 "	5½	21⅜	14¾	2¾	3⅝	75															
20 "	5¾	25 5/16	18	3⅜	4¾	142															

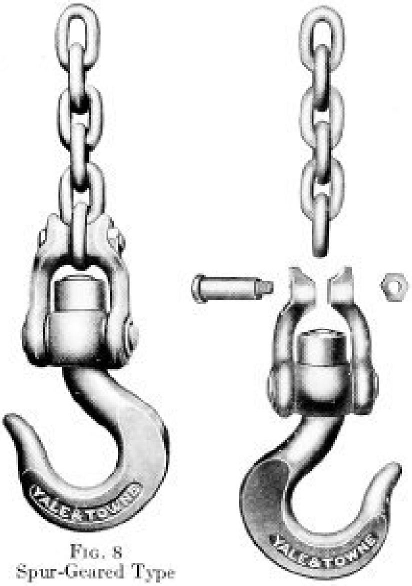


Fig. 8
Spur-Geared Type

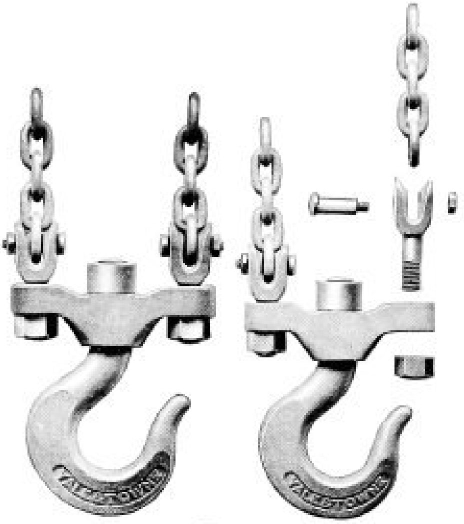


Fig. 9
Screw-Geared Type

Yale Patented Detachable Shackles

THE Yale Patented Detachable Shackle makes it possible for anyone to remove or replace a Yale Load Hook in a few minutes. No blacksmithing is required. It is only necessary to make sure that the nut is screwed down firmly and the end of the thread on the oval bolt peened over slightly before the Block is put into use again. The shackle and oval bolt, both heat-treated, are actually stronger than the chain or the hook. This safety feature enables long load chains to be substituted without hand-welding after the blocks leave the factory.

The use of heat-treated, drop-forged, steel, oval-shaped pins has obvious advantages over round pins. They not only fit the contour of the link but give the fullest possible bearing surface.

These detachable shackles are of great convenience to dealers as they not only permit the carrying in stock of extra load chain to supply Yale Spur-Geared and Screw-Geared Blocks with extra "lift chain," but the use of these shackles enables the dealer to readily replace old load chains.

The advantages of both the Spur-Geared type and the Screw-Geared type of Yale Patented Detachable Shackles may be summed up in the following brief statement:

They are strong—much stronger than chain or hook.

They are simple to connect—no chain welding necessary. Anyone with a little mechanical ability can replace both shackle and hook in a few minutes.

They are safe—the dangerous practice of hand-welding the chain is eliminated where extra length of chain is required.

They are convenient—no blacksmith is needed to make repairs. The user has only to make sure the bolt is in place, the nut screwed down and the threaded end peened over lightly.

Care and Lubrication of Yale Chain Blocks

YALE Chain Blocks are built for continuous heavy use. Under normal conditions they will withstand considerable rough handling, but like any other high-grade machine they require reasonable attention to maintain their high efficiencies.

The high efficiencies of Yale Blocks enable them to lift loads far beyond their rated capacity. This should not be made a regular practice as overloading means consequent overstraining and ultimately the ruin of the Block. Care should be taken so that the load is not allowed to fall suddenly onto the hook. A steady, even pull on the hand chain will insure longer life than sharp, jerky movements.

Lubrication is an important factor. If the bearings are allowed to run dry, friction and chain pull will be increased and renewal of parts will eventually be required. Repairs are needed for chain blocks more frequently through lack of oil than through ordinary lifting of loads. In all Yale Chain Blocks provision has been made for lubrication, and the occasional use of a few drops of oil will insure continued satisfactory service. See data on Yale Chain, Hooks and Wheels.

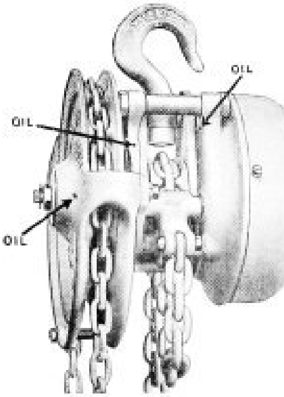


Fig. 10

Yale Spur-Geared Block

Keep the Block well lubricated with good oil. The friction brake parts should be greased periodically. Although protected from grit and dirt, the gear system needs occasional lubrication. This is doubly important where the Block is exposed to intense heat, as in foundries. An oil hole is provided at the top of the internal gear (part 326), and another in the gear cover (part 330) for the lubrication of all parts and bearings within the gear cover. The ratchet case (part 320) has an oil hole for the bearings of the load sheave (part 329) and the driving pinion (part 318). The hand chain wheel (part 328) has an oil hole on the outside directly to its threaded bearing. The guides for the hand chain should be kept securely bolted. When lowering, snap the hand chain lightly and keep it spinning rapidly.

If it is found necessary to take the Block apart, caution must be used, especially in replacing the leather disc. The leather disc (202) must be placed in between disc hub (216) and ratchet disc (201), and the galvanized iron disc (203) must be placed between ratchet disc (201) and hand wheel (328). Compensation for wear of the brake discs is automatically taken up by the hand wheel. However, these discs should be periodically inspected and replaced when wear indicates a lack of smooth running when lowering.

Directions for applying Chain to Yale Spur-Geared Block

Hand Chain. Remove the following parts: Cotter pin and nut from threaded end of the driving pinion (318), checkwasher (125), hand wheel (328), and through bolt and pipe separator between the two halves to the continuous hand chain guide (314).

Pull the hand chain through the hand chain guide far enough to clear the space required by the hand wheel. Replace the hand wheel and put the chain in its place in the hand wheel pockets. Then replace other parts in their original position, and thoroughly tighten all nuts.

Load Chain. Place the load chain on the load sheave (329), with the first link in vertical position, or so it fits in the groove. Run chain over sheave and through the groove in the load chain guide (305). Fasten the first chain link to this guide by means of the small bolt placed thereon.

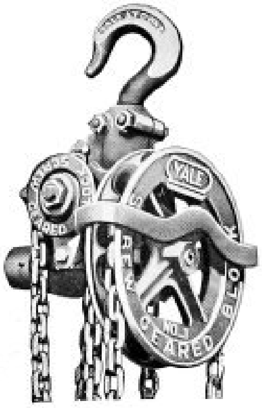


Fig. 11

Yale Screw-Geared Block

Proper lubrication is important for the economical operation of this Block and in order to help the user to keep it in the best condition the following three holes are conveniently located: (a) One in each side of the housing for the worm wheel shaft; (b) one in the center of the housing for the worm and wheel. The housing forms a reservoir which should be kept partly filled with oil. The guide for the hand chain and the guide, guard, and strippers for the load chain should be kept securely bolted.

Directions for applying Chain to Yale Screw-Geared Block

Hang up the Block and remove the following parts: Hand chain guide (55), hand wheel (59), load chain guide (41), and load chain guard (49).

Load Chain. Start at one end of the chain, select part a short distance beyond the detachable shackle and place on load sheave (52), so that the slack chain will hang at the rear of the Block. Trace the chain around to the other end and make certain that it is straight. Hang this end of the chain on the other load sheave so that the bottom swivel will be level. Replace the load chain guide and guard, making certain that they are put back in their original places, the load chain guard going on the side of the housing behind the hand wheel and the load chain guide at the rear of the Block and also note the position of the small locating lug. Thoroughly tighten up all bolts.

Hand Chain. Place the hand chain on the hand wheel, insert it through the hand chain guide and replace both these parts in their original position. Note that the hand wheel does not strike anything when it revolves, then tighten up the set screw and the hand chain guide bolt.

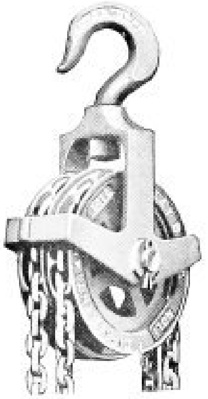


Fig. 12

Yale Differential Block

In order to enable the operator to keep this Block well lubricated, a hole is drilled in the hub of the top and bottom sheaves, through which a good grade of oil should be introduced frequently. If the Block is taken apart, the sheave pin should be thoroughly lubricated with good grease before assembling.

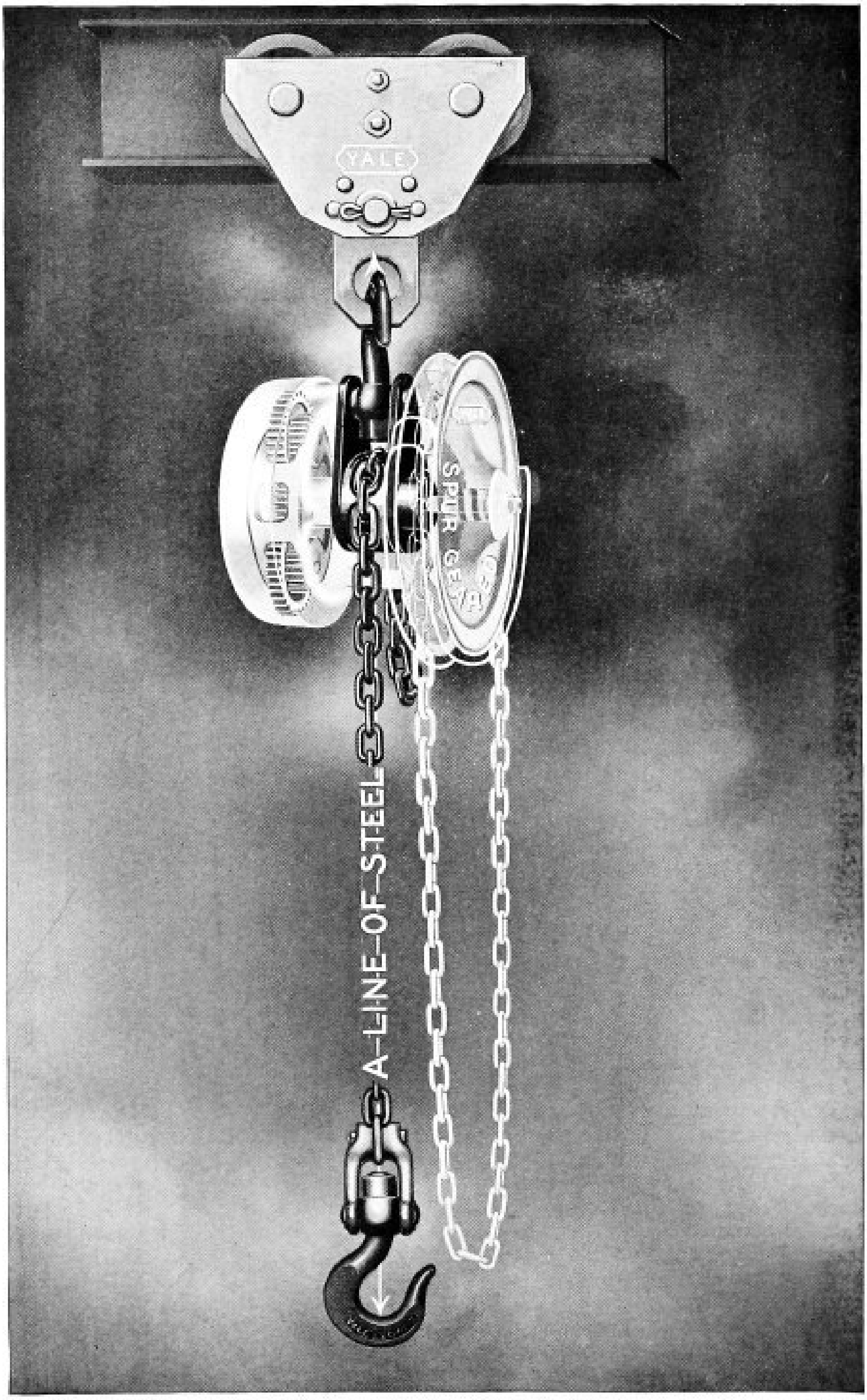
Directions for applying Chain to Yale Differential Block

Remove the top sheave (12), and bottom sheave (13), from their respective yokes. Place the chain on the larger top sheave, form a loop with one side of the chain and run it over the smaller top sheave, making certain that the chain is not twisted. Place the bottom sheave in this loop, then replace both the top and bottom yokes.

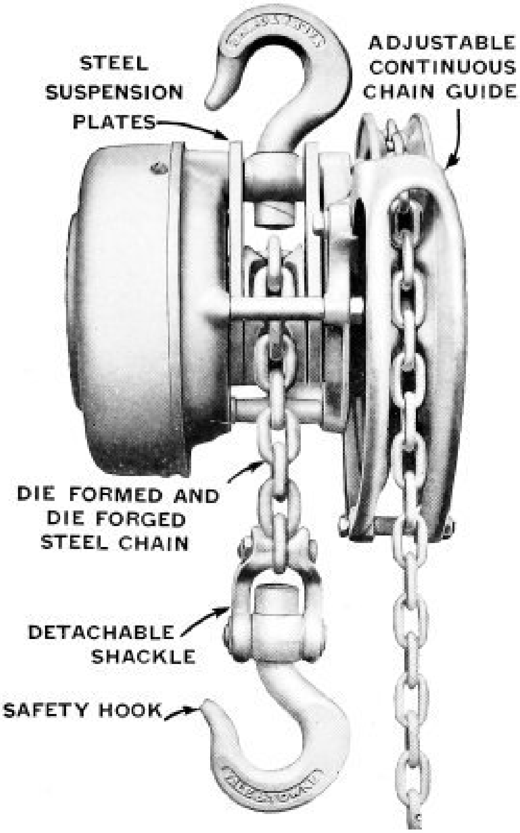
For Parts of Spur-Geared Blocks see pages 28 and 29; for Screw-Geared Block Parts see page 44; for Differential Block Parts see page 47.

YALE

YALE SPUR-GEARED CHAIN BLOCKS



Yale Spur-Geared Block—From "Hook to Hook a Line of Steel"


STEEL SUSPENSION PLATES
ADJUSTABLE CONTINUOUS CHAIN GUIDE
DIE FORMED AND DIE FORGED STEEL CHAIN
DETACHABLE SHACKLE
SAFETY HOOK

Yale Spur-Geared Chain Block

YALE Spur-Geared Chain Blocks are the highest development of the hand-hoist principle. They are the safest and speediest hand-hoists made. They wear longer, lift easier and quicker, and are safer than any other block made. These Blocks have a mechanical efficiency as high as can be obtained in any hoisting equipment.

With Yale Spur-Geared Chain Blocks, the load is held securely at all times. The load is lowered by reversing the pull on the hand chain.

The careful design, resulting from years of experience in building chain blocks, has made this Block speedy and highly efficient. The original efficiency is not lost even after many years of service. The wear is uniform and it has been proved by actual tests that these Blocks, even after severe use, show the same high efficiencies as new ones.

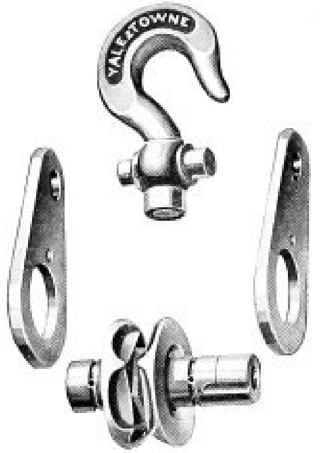
Steel suspension parts carry the load. The parts are few, and of generous proportions and every part is made by The Yale & Towne Manufacturing Company. All bearings are large and thoroughly lubricated. There are no delicate parts to get out of order. By referring to pages 22 and 24 the large percentage of steel which goes into the construction of the Yale Spur-Geared Blocks can be readily noted, forming a "line of steel" from the suspension hook to the load hook.

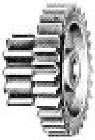
These Blocks are rated on the long ton

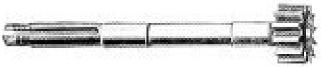
YALE SPUR-GEARED CHAIN BLOCKS

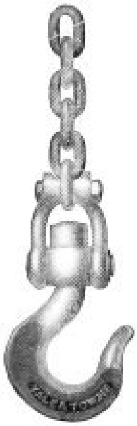
basis, 2,240 pounds to the ton. Each Block is tested before leaving the factory, to a load 50 per cent greater (in long tons) than its rated capacity.

While no Block is intended to lift overloads, this test insures strength to resist injury from strains and shock such as slippage of sling chains, etc.









Yale Steel Suspension Parts

Steel suspension parts are of vital importance in the life of a chain block, increasing its durability and safety.

The lifting parts of the Yale Spur-Geared Block which constitute the "line of steel" are here shown in detail.

Steel Safety Hook and Crosshead.

Both are steel forgings designed to swivel and rock.

Steel Suspension Plates.

These connect upper hook and load sheave bearings supporting the load, thereby eliminating castings at this main point of support.

Steel Load Sheave.

Accurately shaped pockets to fit the steel links of the load chain with provision for positive lubrication of bearings.

Steel Gear and Pinion.

A one-piece gear cut from solid steel with bronze-bushed bearings.

Steel Driving Pinion.

A one-piece forging of special steel to resist extraordinary twisting and bending.

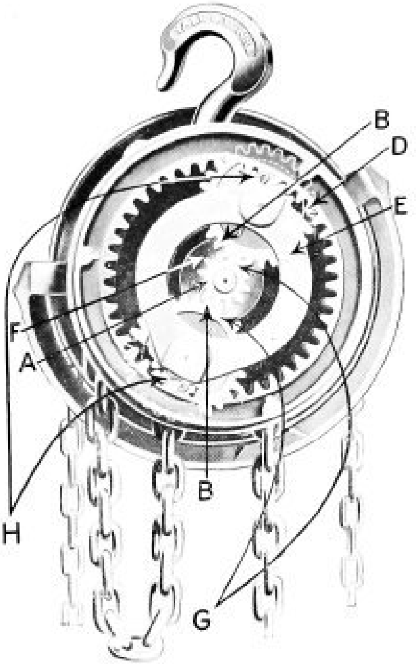
Steel Load Chains.

Die-formed and electrically welded smoothly finished links. The chain is heat-treated to toughen it and lengthen its life and insure uniform strength throughout.

Steel Detachable Shackle and Steel Hook.

No welding necessary when renewing or adding extra lengths of chain.

YALE SPUR-GEARED CHAIN BLOCKS



Principles of Operation

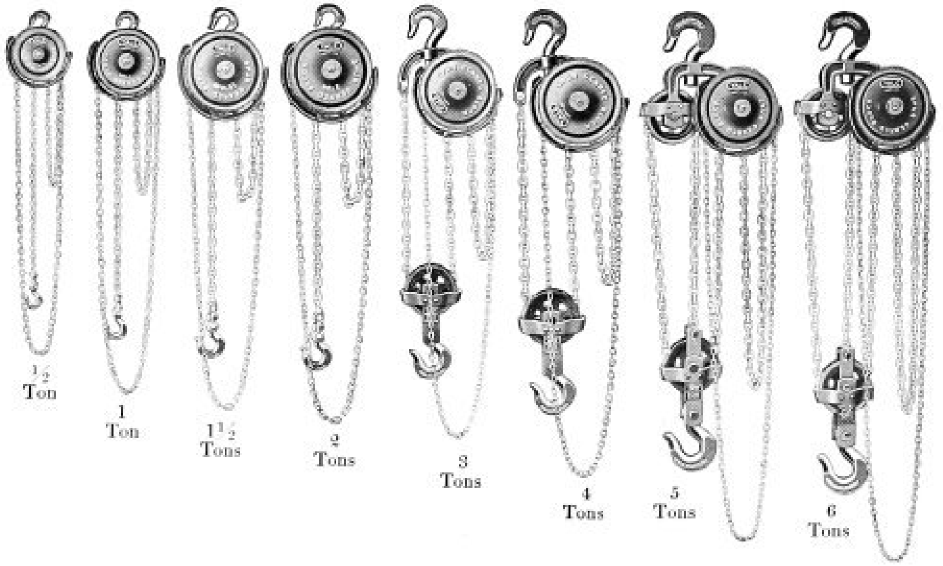
YALE Spur-Geared Chain Blocks are operated on the familiar and fundamental mechanical principle of the "planetary" gear system—intermediate gears revolving planet-fashion around a central pinion and transferring the motion of that pinion to a cage rigidly connected to the load sheave. Operating by means of this enclosed system of planetary gears multiplies enormously the efforts of the operator, and enables him to lift with ease and rapidity loads that would tax the strength of many strong men.

The illustration above makes this clear. When the hand chain is pulled pinion "A" revolves. At two points on diametrically opposite sides of its perimeter the pinion transmits its energy to the intermediate gears "B-B," held in position by the gear-cage "E." The pinions of gears "B-B" mesh with the fixed internal gear "D," which acts as the fulcrum to compel revolution of the gear-cage "E." This gear-cage is keyed directly to the load sheave "F," which rotates and lifts the load chain. Thus, in Yale Spur-Geared Blocks all of the gears are pinioned together in a balanced train.

The thrust of the gear-teeth is so balanced by the counteracting pressures of the intermediate gears that the load is equally distributed at every point and on both bearings. Notice in the illustration that the thrust of the tooth pressure at points "G" is neutralized by the counteracting pressure at points "H."

Thus wear on the bearings is reduced to a minimum and, since the design has provided for the lowest possible stress in each part, the high initial efficiency of the Block is maintained through many years of heavy service.

YALE SPUR-GEARED CHAIN BLOCKS



Yale Spur-Geared Blocks—¼ to 20 Tons Capacity

Rated Capacity in Tons of 2,240 lbs.	Price Complete, Standard Lift	Standard Lift, in Feet *	Minimum Distance Between Hooks	Extra Lift			Test Load in Long Tons
				Price, Per Foot	Chain, in Feet		
					Load	Hand	
¼	$70.00	8	13 ins.	$1.80	1	2	⅜
½†	70.00	8	13 "	1.80	1	2	¾
1	90.00	8	16 "	1.90	1	2	1½
1½	120.00	8	18 "	2.00	1	2	2¼
2	140.00	9	21 "	2.10	1	2	3
3	180.00	10	32 "	3.00	2	2	4½
4	220.00	10	37 "	3.20	2	2	6
5	280.00	12	45 "	4.30	3	2	7½
6	330.00	12	46 "	4.30	3	2	9
8	400.00	12	49 "	5.40	4	2	12
10	480.00	12	54 "	6.50	5	2	15
12	600.00	12	54 "	8.60	6	4	18
16	720.00	12	62 "	10.80	8	4	24
20	850.00	12	70 "	13.00	10	4	30

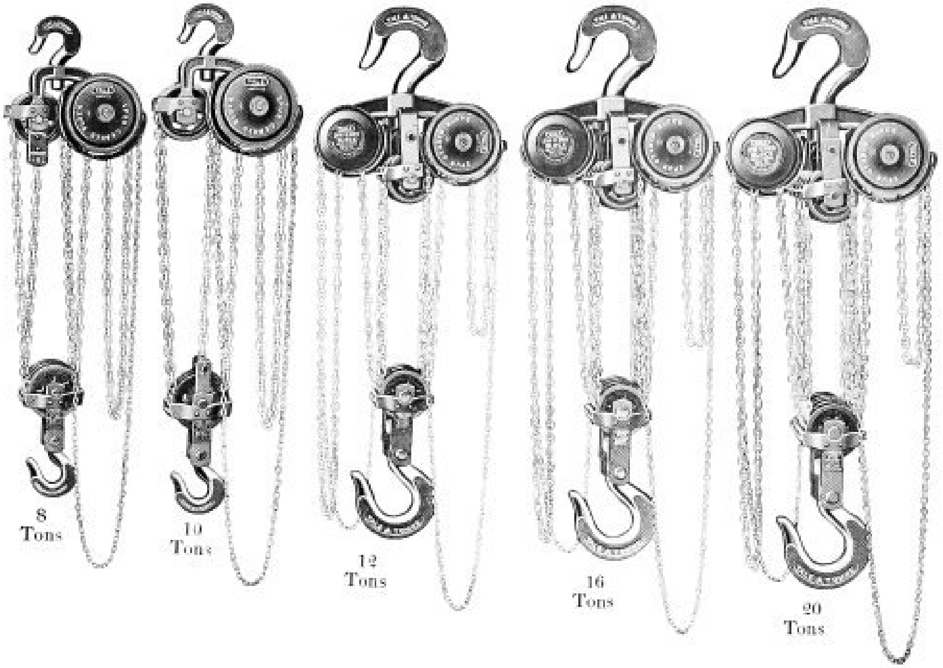
32- and 40-ton prices and full particulars on request.

* "Standard lift in feet" means the travel of the lower hook.

Speed specifications on all these blocks—See page 113.

†We make a ½-ton special "Quick Speed" Spur-Geared Block which is the same as the 1-ton regular with the exception that the gear ratio has been changed to double the speed at half load—list price $90.00.

YALE SPUR-GEARED CHAIN BLOCKS



Yale Spur-Geared Blocks—¼ to 20 Tons Capacity

Rated Capacity in Tons of 2,240 lbs.	Chain Pull to Lift Full Load	Chain Overhauled to Lift Load One Foot	Length in Feet Standard Chain		Shipping Data		
					Weight in Lbs.		Packing Case
			Load	Hand	Net	Gross	Size in Inches
¼	50 lbs.	12½ ft.	9	16	58	76	15 x 14 x 12
½†	62 "	21 "	9	16	58	76	15 x 14 x 12
1	82 "	31 "	9	16	92	115	17 x 16 x 14
1½	110 "	35 "	9	16	132	160	18 x 17 x 16
2	120 "	42 "	10	18	202	248	21 x 20 x 18
3	114 "	70 "	24	22	209	256	25 x 19 x 16
4	124 "	84 "	25	24	299	356	28 x 21 x 18
5	110 "	126 "	44	29	411	482	34 x 25 x 18
6	130 "	126 "	44	29	411	482	34 x 25 x 18
8	135 "	168 "	58	30	500	576	39 x 29 x 20
10	140 "	210 "	72	30	610	700	45 x 29 x 21
12	130* "	126* "	93	30 2 Chains	855	1100	47 x 41 x 21
16	135* "	168* "	117	30	1041	1325	47 x 41 x 21
20	140* "	210* "	146	30	1350	1675	53 x 48 x 21

32- and 40-ton data on request.

Hand chain pull (column 2) is based on a ton of 2,000 lbs.
*For each hand chain.
†Special "Quick Speed" Block (½ ton capacity): Hand chain pull 90 lbs.; hand chain overhaul 14 ft. to lift load 1 ft. See last note on page 16.

YALE SPUR-GEARED CHAIN BLOCKS

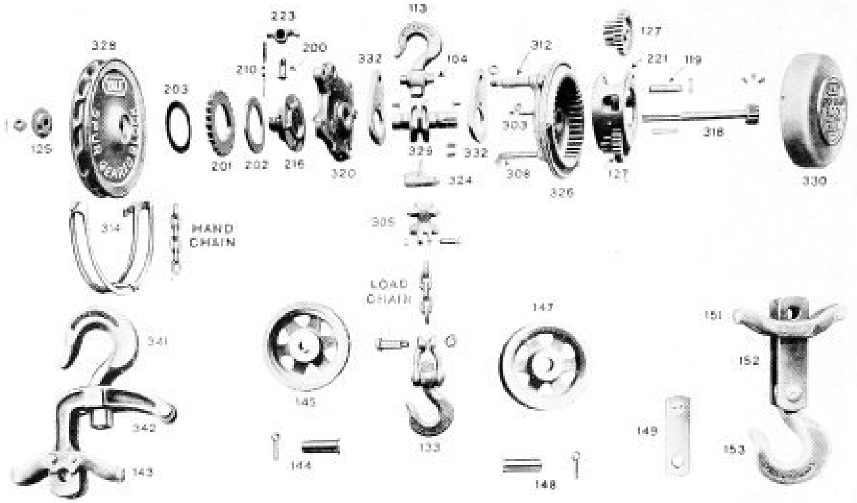


FIG. 13

Parts for Yale Spur-Geared Blocks Marked "SS"

NOTE.—All Spur-Geared Blocks *without* the words "1898 Model" or "Model SS" cast on side of hand wheel are old style made prior to 1898. *Be sure to state for which model parts are required.*

List No.	Name	¼ Ton	½ Ton	1 Ton	1½ Ton	2 Ton	3 Ton	4 Ton	5 Ton	6 Ton	8 Ton	10 Ton	12 Ton	16 Ton	20 Ton
104	Top Crosshead	$1.10	$1.10	$1.60	$2.35	$2.95	—	—	—	—	—	—	—	—	—
113	Top Hook and Nut	1.85	1.85	2.95	3.65	4.40	—	—	—	—	—	—	—	—	—
119	Gear and Pinion Pins, each	.65‡	.65‡	.90	1.10	1.35	$1.10	$1.35	$1.35	$1.35	$1.35	$1.35	$1.35	$1.35	$1.35
125	Check Washer	.65	.65	.90	1.10	1.25	1.10	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
127	Gear and Pinion, each	2.60‡	2.60‡	3.30	4.40	5.90	4.40	5.90	5.90	5.90	5.90	5.90	5.90	5.90	5.90
133	Lower Swivel Hook	3.65	3.65	5.50	6.60	8.80	—	—	—	—	—	—	—	—	—
143	Top Guard and Guides	—	—	—	—	—	—	—	10.30	14.70	17.65	22.00	23.50	25.00	26.50
144	Top Sheave Pin	—	—	—	—	—	—	—	1.85	3.65	4.40	5.15	5.15	6.60	8.80
145	Top Sheave, each	—	—	—	—	—	—	—	6.60	6.60	6.60	8.80	8.80	8.80	8.80
147	Bottom Sheave, each	—	—	—	—	—	5.90	6.60	6.60	6.60	6.60	8.80	8.80	8.80	8.80
148	Bottom Sheave Pin	—	—	—	—	—	1.45	1.85	2.20	4.00	4.40	5.15	5.15	6.60	8.80
149	Becket Straps	—	—	—	—	—	—	—	7.35	11.00	13.25	14.70	—	—	—
151	Bottom Guards and Guides	—	—	—	—	—	8.10	11.00	11.00	14.70	17.65	22.00	23.50	25.00	29.40
152	Bottom Side Plates & Cross-head	—	—	—	—	—	7.35	10.30	14.00	23.50	29.40	36.75	36.75	39.70	42.65
153	Bottom Hook	—	—	—	—	—	8.80	13.25	17.65	26.50	36.75	51.50	55.15	73.50	161.80
200	Pawl Stud	.50	.50	.75	.90	.95	.90	.95	.95	.95	.95	.95	.95	.95	.95
201	Ratchet Disc	1.50	1.50	2.00	2.60	2.95	2.60	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
202	Leather Disc	.95	.95	1.10	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
203	Galvanized Iron Disc	.30	.30	.45	.60	.75	.60	.75	.75	.75	.75	.75	.75	.75	.75
210	Pawl Spring	.15	.15	.25	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
216	Disc Hub	3.50	3.50	4.40	6.60	8.10	6.60	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10
221	Pinion Cage	3.65‡	3.65‡	5.15	7.35	9.55	7.35	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
223	Pawl	.60	.60	.75	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90
303	Small Separator	.60	.60	.75	.90	1.10	.90	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
305	Load Chain Guide	1.10	1.10	1.45	2.20	2.55	2.20	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
308	Load Chain Guide Bolt	.30	.30	.55	.60	.75	.60	.75	.75	.75	.75	.75	.75	.75	.75
312	Large Separator	.95	.95	1.10	1.35	1.45	1.35	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
314	Hand Chain Guide	4.40	4.40	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
318	Driving Pinion	4.40‡	4.40‡	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
320	Ratchet Case	4.40	4.40	6.60	8.80	9.55	8.80	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
324	Stripper	.50	.50	.50	.75	.90	.75	.90	.90	.90	.90	.90	.90	.90	.90
326	Internal Gear	7.35	7.35	8.80	12.50	14.00	12.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
328	Hand Wheel	4.40‡	4.40‡	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
329	Load Sheave	7.35	7.35	8.80	13.25	14.70	13.25	14.70	14.70	14.70	14.70	14.70	14.70	14.70	14.70
330	Gear Cover	2.20‡	2.20‡	3.30	5.15	5.90	5.15	5.90	5.90	5.90	5.90	5.90	5.90	5.90	5.90
332	Suspension Plate each	1.50	1.50	2.95	4.40	5.50	4.40	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
341	Top Hook	—	—	—	—	—	8.80	13.25	17.65	26.50	36.75	51.50	55.15	73.50	161.80
342	Top Yoke	—	—	—	—	—	20.60	30.90	36.75	44.10	58.80	88.25	95.60	103.00	110.30
	Load Chain, Steel, per ft.	.80*	.80*	.90*	1.00*	1.10*	1.00	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Hand Chain, " " "	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50

*When ordering load chain specify whether or not hook is required.

‡Parts should be specified "Quick Speed" for blocks so marked on gear cover. Use price in ½-ton column for ¼-ton "Quick Speed" size and in 1-ton column for ½-ton "Quick Speed" size.

§The continuous hand chain guide No. 314 may be used on the 1898 model.

†Parts No. 221 and 329 are a drive fit. In assembling see that the holes in No. 127 line up at the center.

Many parts for "trolley blocks" are special. Specify model, capacity and size of the I-beam.

YALE SPUR-GEARED CHAIN BLOCKS

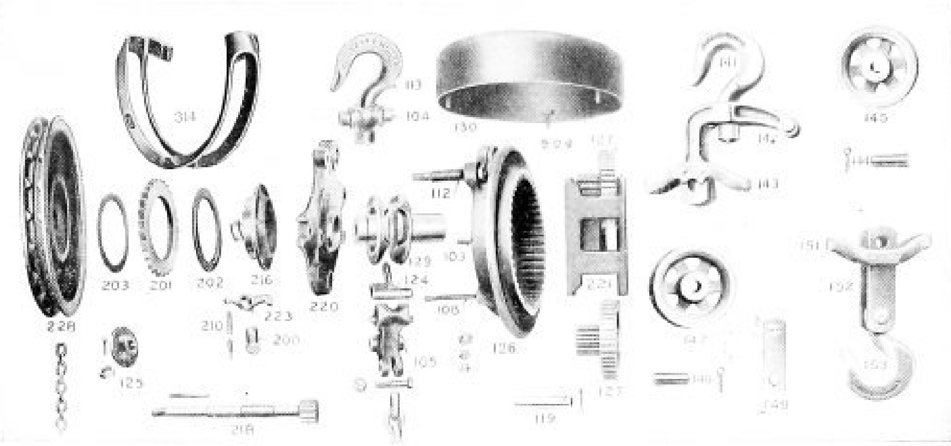


FIG. 14

Parts for Yale Spur-Geared Blocks Marked "1898 Model"

NOTE.—All Spur-Geared Blocks *without* the words "1898 Model" or "Model 88" cast on side of hand wheel are old style, made prior to 1898. ***Be sure to state for which model parts are required.***

List No.	Name	½ Ton	1 Ton	1½ Ton	2 Ton	3 Ton	4 Ton	5 Ton	6 Ton	8 Ton	10 Ton	12 Ton	16 Ton	20 Ton
103	Small Separator	$0.60	$0.75	$0.90	$1.10	$0.90	$1.10	$1.10	$1.10	$1.10	$1.10	$1.10	$1.10	$1.10
104	Top Crosshead	1.10	1.60	2.35	2.95	—	—	—	—	—	—	—	—	—
105	Load Chain Guide	1.10	1.45	2.20	2.55	2.20	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55
108	Load Chain Guide Bolt	.30	.55	.60	.75	.60	.75	.75	.75	.75	.75	.75	.75	.75
112	Large Separator	.95	1.10	1.35	1.45	1.35	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
113	Top Hook and Nut	1.85	2.95	3.65	4.10	—	—	—	—	—	—	—	—	—
119	Gear and Pinion Pins, each	.65‡	.90	1.10	1.35	1.10	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
124	Stripper	.50	.50	.75	.90	.75	.90	.90	.90	.90	.90	.90	.90	.90
125	Check Washer	.65	.90	1.10	1.25	1.10	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
126	Internal Gear	7.35	8.80	12.50	14.00	12.50	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
127	Gear and Pinion, each	2.60‡	3.30	4.40	5.90	4.40	5.90	5.90	5.90	5.90	5.90	5.90	5.90	5.90
129	Load Sheave†	7.35	8.80	13.25	14.70	13.25	14.70	14.70	14.70	14.70	14.70	14.70	14.70	14.70
130	Gear Cover	2.20	3.30	5.15	5.90	5.15	5.90	5.90	5.90	5.90	5.90	5.90	5.90	5.90
133	Lower Swivel Hook (Detachable)	3.65	5.50	6.60	8.80	—	—	—	—	—	—	—	—	—
141	Top Hook	—	—	—	—	8.80	13.25	17.65	26.50	36.75	51.50	55.15	73.50	161.80
142	Top Yoke	—	—	—	—	29.60	30.90	36.75	44.10	58.80	88.25	95.60	103.00	110.30
143	Top Guard and Guides	—	—	—	—	—	—	10.30	14.70	17.65	22.00	23.50	25.00	26.50
144	Top Sheave Pin	—	—	—	—	—	—	1.85	3.65	4.40	5.15	5.15	6.60	8.80
145	Top Sheave	—	—	—	—	—	—	6.00	6.60	6.60	8.80	8.80	8.80	8.80
147	Bottom Sheave	—	—	—	—	5.90	6.60	6.60	6.60	6.60	8.80	8.80	8.80	8.80
148	Bottom Sheave Pin	—	—	—	—	1.45	1.85	2.20	4.00	4.40	5.15	5.15	6.60	8.80
149	Becket Straps	—	—	—	—	—	—	7.35	11.00	13.25	14.70	—	—	—
151	Bottom Guards and Guides	—	—	—	—	8.10	11.00	11.00	14.70	17.65	22.00	23.50	25.00	29.40
152	Bottom Side Plates and Crosshead	—	—	—	—	7.35	10.30	14.00	23.50	29.40	36.75	36.75	39.70	42.65
153	Bottom Hook	—	—	—	—	8.80	13.25	17.65	26.50	36.75	51.50	55.15	73.50	161.80
200	Pawl Stud	.50	.75	.90	.95	.90	.95	.95	.95	.95	.95	.95	.95	.95
201	Ratchet Disc	1.50	2.00	2.60	2.95	2.60	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
202	Leather Disc	.95	1.10	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
203	Galvanized Iron Disc	.30	.45	.60	.75	.60	.75	.75	.75	.75	.75	.75	.75	.75
210	Pawl Spring	.15	.25	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
216	Disc Hub	3.50	4.40	6.60	8.10	6.60	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10
218	Driving Pinion	4.40‡	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
220	Ratchet Case	4.40	6.60	8.80	9.55	8.80	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
221	Pinion Cage†	3.65‡	5.15	7.35	9.55	7.35	9.55	9.55	9.55	9.55	9.55	9.55	9.55	9.55
223	Pawl	.60	.75	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90	.90
228	Hand Wheel	4.40‡	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
314§	Continuous Hand Chain Guide	4.40	5.15	7.35	8.80	7.35	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
	Load Chain, Steel, per ft.	.80	.90	1.00	1.10	1.00	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
	Hand Chain, Steel, per ft.	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50

*When ordering load chain specify whether or not hook is required.

‡Parts should be specified "Quick Speed" for blocks so marked on gear cover. Use price in ½-ton column for ¼-ton "Quick Speed" size and in 1-ton column for ½-ton "Quick Speed" size.

§The continuous hand chain guide No. 314, illustrated on the opposite page, may be used on this model.

†Parts 129 and 221 are a drive fit. In assembling see that the holes in No. 127 line up at the center.

Many parts for "trolley blocks" are special. Specify model, capacity, and size of the I-beam.

YALE SPUR-GEARED CHAIN BLOCKS

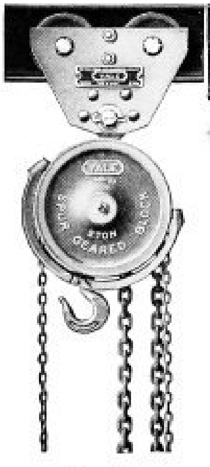


Fig. 15
$\frac{1}{4}$ to 2 Tons

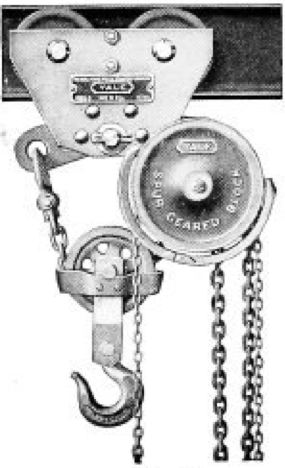


Fig. 16
3 to 4 Tons

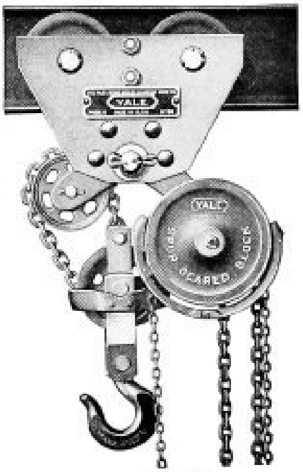


Fig. 17
5 to 10 Tons

Close Headroom Combinations

THE combination of the Yale Spur-Geared Block with the Yale Steel-Plate Trolley, as illustrated above, is used to save headroom. It is made by substituting, at a slight additional expense, a special clevis in place of a top hook. By hooking the $\frac{1}{4}$, $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2-ton Yale Spur-Geared Blocks directly over the equalizing pins of Yale Steel-Plate Trolleys, close headroom combinations are made which give practically the same "B" dimension as when the Blocks are clevised to the Trolleys. (See tables on page 31.)

Maximum headroom is obtained by using the "built-in" or Army Type of Block. (See page 32.)

The special clevis connections featured on this page, together with the Army Type Block on page 32, are developments of the Yale Steel-Plate Trolley, either plain or geared.

Where headroom permits, the usual hook-in connection is to be preferred, as the Block can be removed from the Trolley more easily than is possible with these special clevis connections; and a greater degree of flexibility in handling the load is afforded with the hook-in type.

Note.—For data on Yale Spur-Geared Chain Blocks see pages 26 and 27. For specifications covering the Plain and Geared Types of Yale Steel-Plate Trolleys see pages 67 and 69.

Information and Prices

Rated Capacity in Tons	List Price of Block with Plain Trolley	List Price of Block with Geared Trolley	Standard Sizes of I-Beam‡	Standard Lift in Feet*	Minimum Distance from Bottom of I-Beam to Inside of Lower Hook
$\frac{1}{4}$	$100.00	......	4 inches	8	$14\frac{3}{4}$ inches
$\frac{1}{2}$	103.00	......	5 "	8	$14\frac{3}{4}$ "
1	129.00	$158.00	6 "	8	$18\frac{13}{16}$ "
$1\frac{1}{2}$	168.00	197.00	7 "	8	$21\frac{5}{8}$ "
2	195.00	225.00	8 "	9	$24\frac{3}{16}$ "
3	240.00	275.00	9 "	10	$30\frac{1}{4}$ "
4	303.00	351.00	10 "	10	$33\frac{7}{8}$ "
5	387.00	447.00	12 "	12	$42\frac{1}{2}$ "
6	461.00	532.00	15 "	12	43 "
8	567.00	685.00	20 "	12	47 "
10	693.00	825.00	24 "	12	50 "

*For price of extra lift with plain trolley see extra lift prices for Spur-Geared Blocks, page 26. Extra lift with geared trolley same price as extra lift for Spur-Geared Blocks, plus $1.20 list per foot of reach of hand chain.

‡Trolleys are adjustable to 3 sizes larger than the standard I-beam. Trolleys for special I-beam see extra prices, pages 67 and 69.

YALE SPUR-GEARED CHAIN BLOCKS

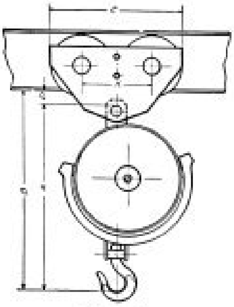


Fig. 18
¼ to 2 Tons

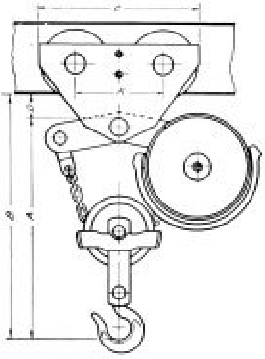


Fig. 19
3 to 4 Tons

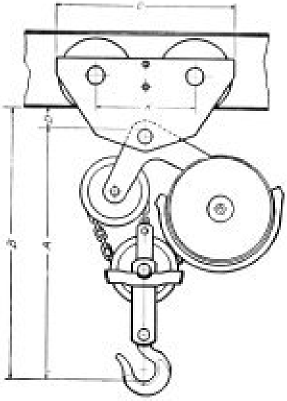


Fig. 20
5 to 10 Tons

Specifications for Close Headroom Combinations

When the Block is Hooked Over the Equalizing Pin

(Not illustrated)

Capacities in Tons	¼	½	1	1½	2
"B" Dimensions, Inches	15	15	18 5/16	20¾	23⅝

When the Block is Clevised to Trolley

Data for Fig. 18

Capacity in Tons	Dimensions in Inches				
	A	B	C	D	K
¼	12¾	14¾	9	2	5
½	12¾	14¾	10⅜	2	5⅜
1	16½	18 13/16	13¼	2 5/16	7¼
1½	18⅞	21⅝	15½	2¾	8.4
2	21 9/16	24 3/16	17	2⅝	9.4

Data for Fig. 19

Capacity in Tons	Dimensions in Inches				
	A	B	C	D	K
3	27¾	30¼	20	2½	11.2
4	31⅜	33⅞	22	2½	12.2

Data for Fig. 20

Capacity in Tons	Dimensions in Inches				
	A	B	C	D	K
5	40	42½	26	2½	14
6	40 1/16	43	26	2 15/16	14
8	44	47	29	3	15.4
10	46 13/16	50	31½	3 3/16	16.6

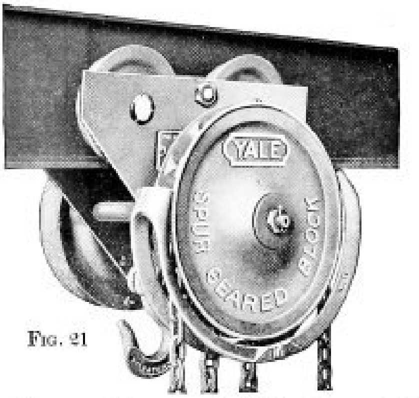


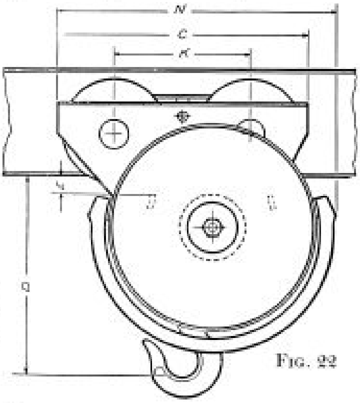
FIG. 21

Yale Spur-Geared Trolley Block

THIS special method of suspending a Yale Spur-Geared Block by building it into a Yale Plain Steel-Plate Trolley, has been referred to for many years as the Army Type of Yale Spur-Geared Block. It can be seen from the illustration above that this combination of Trolley and Block gives the shortest headroom possible, taking the measurement from the under-side of the I-beam to the bearing point of the load hook raised to its highest position.

For example: This special combination, in a 1-ton size, will allow the load hook to come within 11¾ inches of the I-beam track. Compare this distance with that of the Spur-Geared Block hooked into a standard Trolley—a distance of 23 inches.

Where headroom is limited this method of suspension has found numerous applications. It has made possible the use of a hoist and I-beam trolley system for handling coal and ashes in the basements of schools, public buildings, and office buildings throughout the country. It has been applied in the modernizing of material handling systems of many factories built before the advantages of high ceilings were recognized.



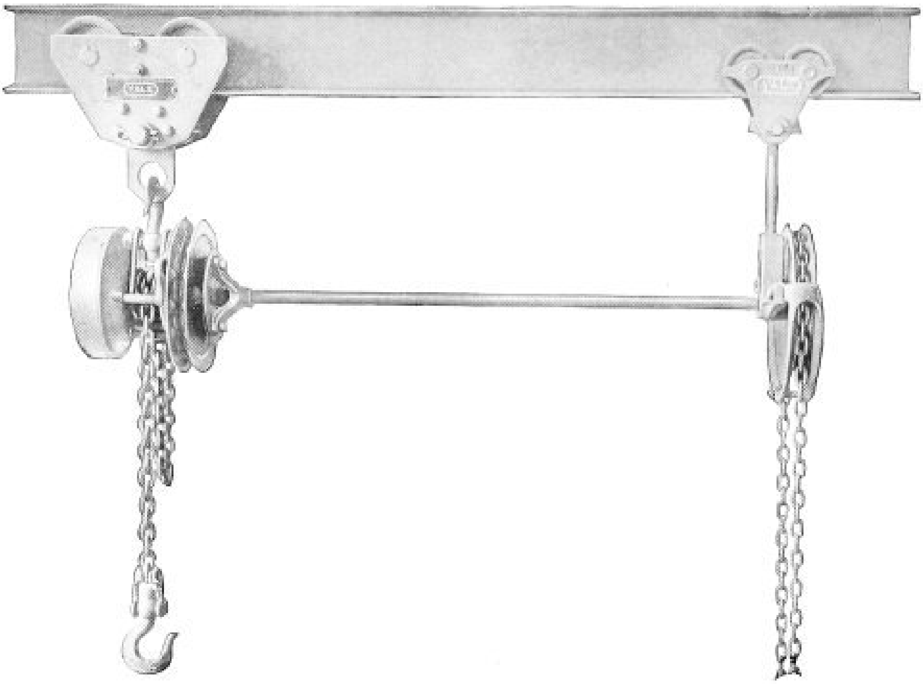
Note: — This type can also be built with the Yale Geared Trolleys.

FIG. 22

Information and Prices

Rated Capacity in Tons	Price Complete	Lift In Feet	Price of Extra Lift Per Foot	Standard Size of I-Beam	Limits of Widening for I-beam Inches	Dimensions in Inches					Net Weight in Lbs.
						"C"	"D"	"E"	"K"	"N"	
¼	$117.00	8	$1.80	5 ins.	10	10⅜	10	1 7/16	5⅝	12⅜	90
½	117.00	8	1.80	5 "	10	10⅜	10	1 7/16	5⅝	12⅜	90
1	149.00	8	1.90	6 "	15	13¼	11¾	1 7/16	7¼	15⅛	150
1½	190.00	8	2.00	7 "	20	15½	13¼	1 7/16	8⅖	17⅛	180
2	221.00	9	2.10	8 "	24	17	16	1 7/16	9⅖	19¼	300
3	250.00	10	3.00	9 "	24	20	26	1 7/16	11⅕	23¼	380
4	339.00	10	3.20	10 "	24	22	29	1 7/16	12⅕	25⅞	530
5	433.00	12	4.30	12 "	24	26	36½	1 7/16	14	29⅞	680
6	635.00	12	4.30	15 "	24	26	36½	1 7/16	14	29⅞	700

Additional price for widening trolley blocks to suit larger beams than standard, up to the maximum mentioned in this table, $30.00 list. If a trolley hoist is desired to run on an I-beam one or two sizes smaller than standard, there will be an extra charge of $30.00 list.
When ordering parts specify model, and size of I-beam.



Yale Extended Hand Wheel Block

THIS device is especially designed for use where it is advisable to keep the operator or the hoisting chain clear of the load, as in the handling of freshly painted automobile bodies where it protects the fresh paint from being marred during any handling the body might require.

It has found many applications in foundries where bulky or heavy loads or those which give off excessive heat must be handled. It is used also over hatchways, shafts, and in similar unhandy locations where it is impossible or unsafe for the operator to stand under the load.

This extension can be connected with any regular stock model Yale Spur-Geared Chain Block of comparable size, requiring a special hand wheel on the block.

This piece of equipment combines all the advantages of any regular stock model Yale Spur-Geared Chain Block of comparable size with the additional feature of the Extended Hand Wheel attachment.

Information and Prices

Rated Capacity in Tons	Price of Block with 3-Foot Extension† Without Trolleys*	Regular Lift	Price per Foot for Extra Extension	Maximum Extension	Price for Extended Hand Wheel Device Only §
$\frac{1}{4}$ ton	$103.35	8 feet	$0.90	10 feet	$33.35
$\frac{1}{2}$ "	103.35	8 "	0.90	10 "	33.35
1 "	125.85	8 "	1.10	10 "	35.85
1$\frac{1}{2}$ "	169.20	8 "	1.20	10 "	49.20
2 "	191.70	9 "	1.30	10 "	51.70

*Trolley which supports the block should be of the same capacity. Trolley which supports the extended hand wheel is usually $\frac{1}{4}$-ton, widened to fit the beam.

†Extension means distance between centers of load and hand chain.

For trolley prices see pages 67 and 72.

§Trolley on extended hand wheel device not included.

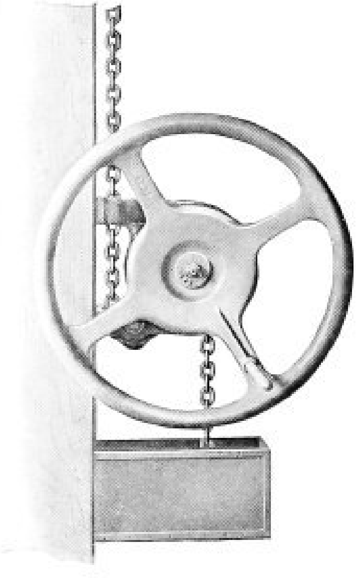


Fig. 23

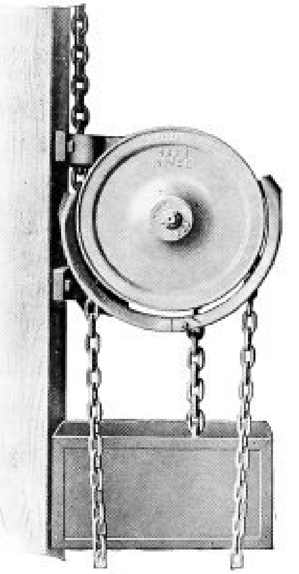


Fig. 24

Yale Spur-Geared Winch

THIS winch has a wide range of usefulness in warehouses, on steamship piers and in industrial plants, for raising and lowering heavy pier shed folding doors, in handling auto-truck bodies, or in use over hatchways or on jib cranes.

The mechanism of the Spur-Geared Block shown in fig. 25 is arranged within a heavy malleable frame. This frame can be bolted directly to any vertical wooden or steel structural member, and the load chain supported by suitably located guide sheave wheels, fig. 26.

This winch sustains the load automatically at any position.

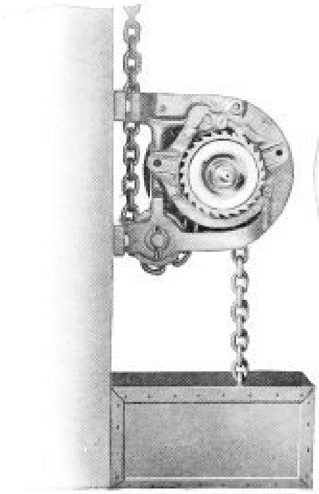
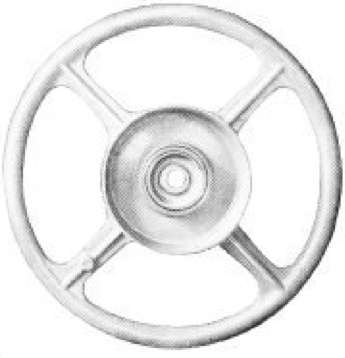


Fig. 25



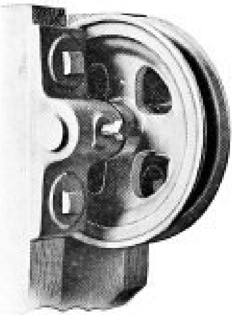
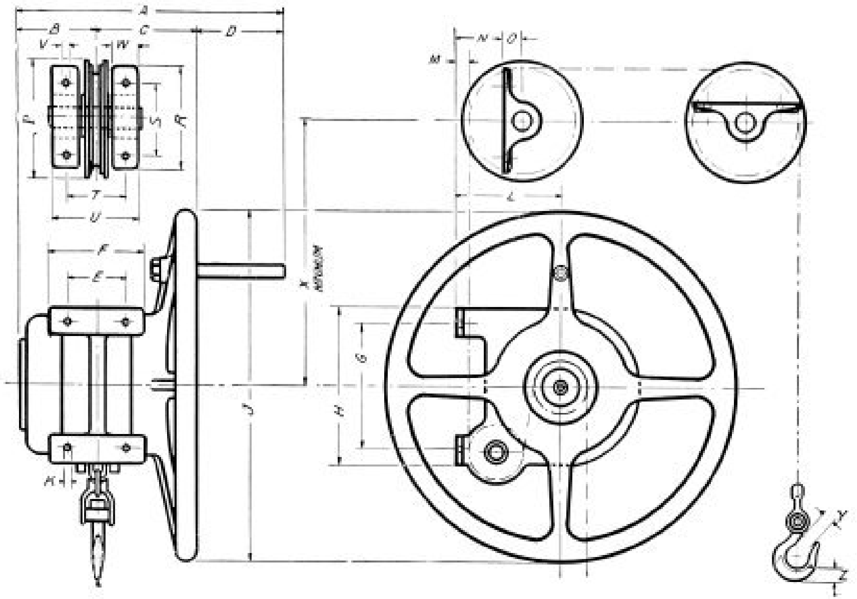


Fig. 26

YALE SPUR-GEARED WINCHES



The standard winch is equipped with 16 lineal feet of load chain, but any additional length can be provided.

A balance wheel with crank handle, fig. 23, is furnished with all machines, except where the location of the winch necessitates the use of a hand chain wheel, fig. 24, and a loop of hand chain to permit the winch to be operated from a more remote position.

This winch is built in two capacities, 1500 pounds and 3000 pounds.

Speeds

Capacity Pounds	Full Load		Half Load	
	Hoisting	Lowering	Hoisting	Lowering
1500 3000	4 1/2 F.P.M. 1 "	12 F.P.M. 10 "	9 F.P.M. 4 1/2 "	15 F.P.M. 12 "

Prices

Capacity Pounds	With 16 ft. Load Chain	Guide Sheave and Bearing, each	Extra Load Chain per ft.	Extra Hand Chain per ft.
1500 3000	$100.00 160.00	$10.00 17.00	$.90 1.10	$.50 .50

Dimensions in Inches

Capacity Pounds	A	B	C	D	E	F	G	H	J	K	L	M
1500	19 3/8	5 1/8	6 3/4	7 1/2	4 5/8	6 3/8	8 5/8	10 1/2	23 1/2	11/16	7	1 1/8
3000	23 3/8	7 3/8	8 1/2	7 1/2	7	9 1/8	17 5/16	20 5/16	23 1/2	13/16	14 1/8	2 1/2

Capacity Pounds	N	O	P	R	S	T	U	V	W	X	Y	Z
1500	3 5/8	1 1/4	8	7 1/8	4 9/16	4 11/16	7 1/4	11/16	2 9/16	11	1 5/16	1 3/16
3000	5 3/4	1 1/2	10 1/4	7 5/8	5 1/16	5 15/16	9	3/4	3 1/16	17	1 7/8	1 1/2

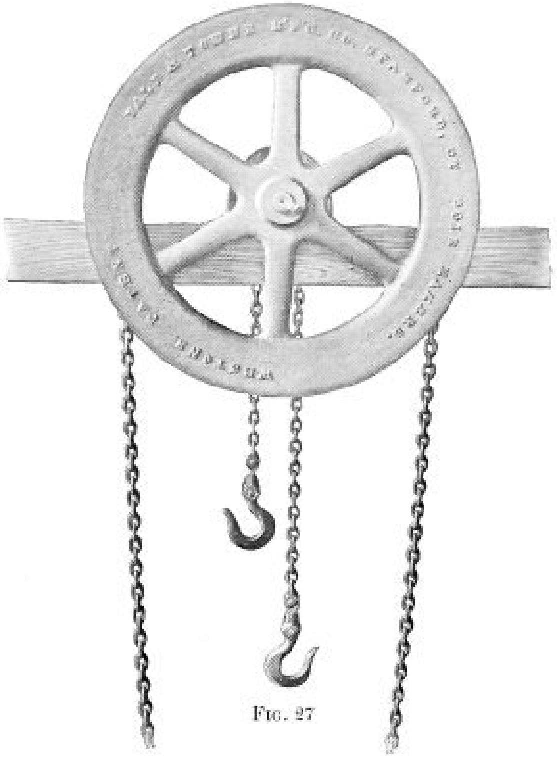


FIG. 27

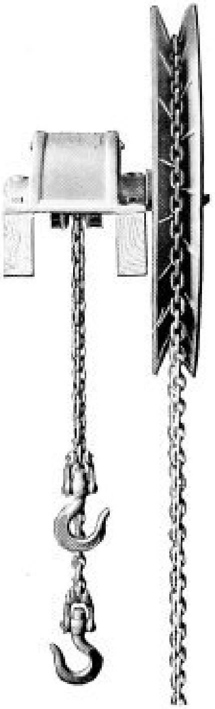


FIG. 28

Yale Double Lift Hoist

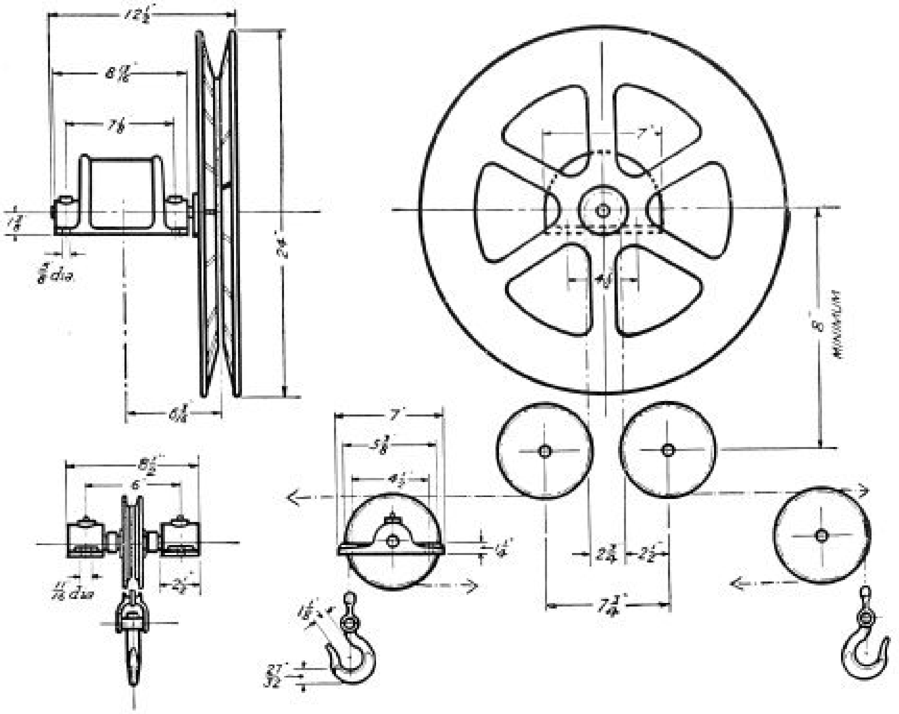
YALE Double Lift Hoists have found a wide application where bulky loads must be raised through hatchways, shafts, or passageways, or over dip tanks where remote control, hand operation, is desirable.

This type of Hoist may be mounted in various positions and used in combination with extra guide sheaves to either raise or pull the load. It has been found particularly advantageous in the horizontal or incline movement of trolleys where electrically operated trolleys might otherwise be necessary. Where electrically operated cranes or end racking mechanism is not feasible, this Hoist can be mounted on the center of the crane and the load chain ends anchored at either end of the run-way.

A 500 pound load can be lifted at the rate of 16 feet per minute, and with lighter loads proportionately higher speeds can be obtained. The load may be attached to either hook and the hoist operated in either direction. A double ratchet and gear automatically hold the load in any desired position.

The Yale Double Lift Hoist is safe, simple in construction and reasonably priced. It is fitted with a deep ribbed wheel which enables the Hoist to be operated by either a hand chain or a rope.

YALE DOUBLE LIFT HOIST



Suggested arrangement of load chain and guide sheaves for wide lifts and horizontal pulls.

The end view, fig. 28, shows the method of attaching the gear housing to parallel girders or support members by means of lag screws or through bolts. A 90 pound pull on the hand chain will induce a 500 pound pull on the load chain.

The arrangement of the gearing and chain wheel in relation to the position of the sheaves may be varied from the minimum distances shown in the drawing above.

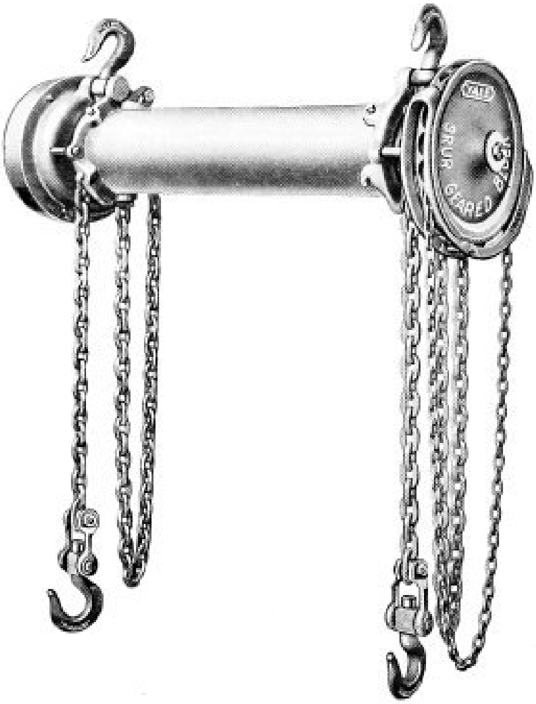
A sufficient number of the principal dimensions are given to enable the correct placement of this Hoist for any specific operation.

Information and Prices

Capacity, Pounds	Net Weight, Pounds	Approximate Hoisting Speed Feet per Min. Full Load	Price Complete with 16 feet of Load Chain, Less Hand Chain or Hand Rope	Price per ft. for Extra Hoist	*Hand-chain or Hand-rope Extra		Price of Extra Length of Shaft	
					Rope	Chain	First Ft. Including Bearing	Extra Ft.
500	84	16	$62.00	$0.75	$7.50	$12.50	$5.00	$1.90

*Hand-chain, Standard ¼-inch, $0.50 per lineal foot.

YALE SPUR-GEARED CHAIN BLOCKS



Yale Twin-Hook Spur-Geared Block

THIS type of Yale Spur-Geared Chain Block has only one hand chain, which simultaneously operates the two load hooks, thus enabling one man to lift platforms, tanks, vats, drying racks, and other long pieces evenly.

One of the best known uses for Yale Twin-Hook Spur-Geared Blocks is in the lifting of removable bodies from motor trucks used in modern transportation systems. This enables the truck to make a trip with one body while another is being filled. When the truck returns, the empty body is lifted from the truck chassis by means of the Yale Twin-Hook Spur-Geared Chain Block, and replaced, by the same means, with a loaded body.

Total Capacity in Tons *	Center Distance between Hooks						Lift in Feet**	Extra Lift Price per Ft.	Hand Chain Pull in Pounds
	3 Feet	4 Feet	5 Feet	6 Feet	7 Feet	8 Feet			
½	$300.00	$310.00	$320.00	$330.00	$340.00	$350.00	8	$2.60	49
1	320.00	330.00	340.00	350.00	360.00	370.00	8	2.80	82
1½	340.00	350.00	360.00	370.00	380.00	390.00	8	3.00	102
2†	400.00	410.00	420.00	430.00	440.00	450.00	9	3.20	83
3	440.00	450.00	460.00	470.00	480.00	490.00	10	5.00	102
4	500.00	510.00	520.00	530.00	540.00	550.00	10	5.40	96
5	600.00	610.00	620.00	630.00	640.00	650.00	12	7.60	116
6	700.00	710.00	720.00	730.00	740.00	750.00	12	7.60	106
8	820.00	830.00	840.00	850.00	860.00	870.00	12	9.80	114

*Half this load on each hook.

** Figures denote travel of bottom hooks with regular lengths of chain.

† 2 tons and larger have bottom sheaves.

YALE CAST-IRON SHEAVES

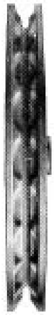


FIG. 29

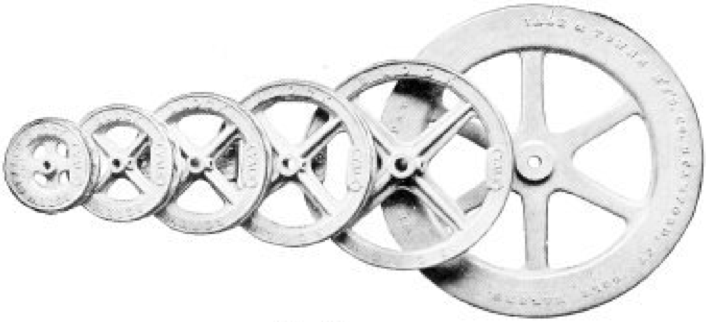


FIG. 30

Sheaves

THESE sheaves are made in 26 sizes and are supplied to a large number of manufacturers of various kinds of light and heavy machinery. They have found applications wherever a positive rotary motion is needed, including:

Operating large or inaccessible valves;
Handling rolling doors;
Lifting and lowering the tables of printing presses;
Opening and closing doors of heat-treating furnaces;
Operating sliding doors in grain and coal chutes, etc.;
Operating counterweights.

These sheaves are commonly used with Yale heat-treated Steel Chain, which makes an ideal combination, because the pockets of the sheaves are the identical shape of Yale chains' links.

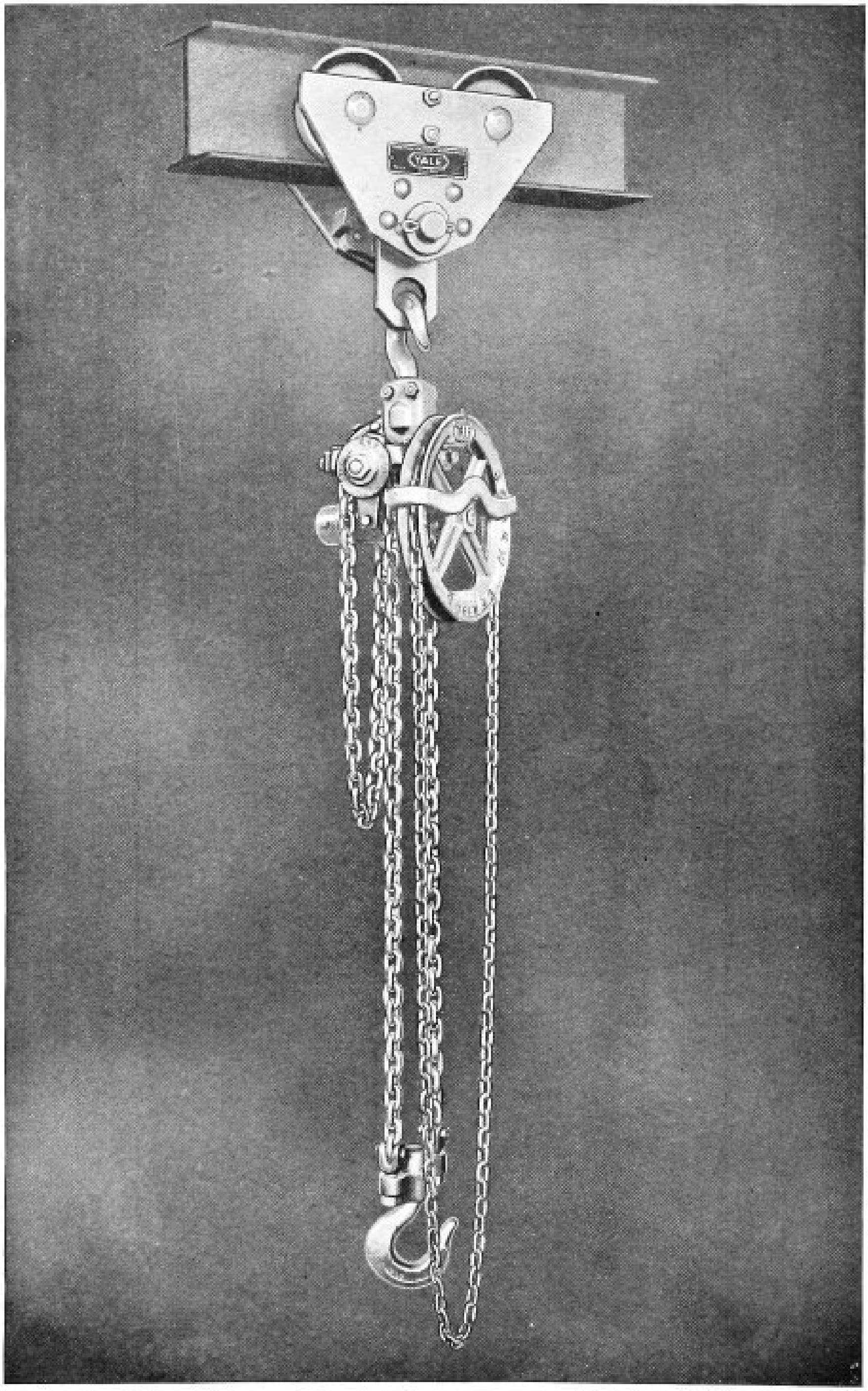
In ordering sheaves, it is necessary to state whether they are desired with set-screw, keyway or plain bore shafts.

Specifications—Cast-Iron Sheaves

Sheaves List No.	Chain Hand or Load		No. of Pockets	Wt. Lbs.	Outside Diameter Inches	Pitch Diameter Inches	Dimensions Wheel Hub		Standard Size Bore Inches	Price
	Size	Type					Dia. Inches	Length Inches		
1-4 A	1/4" SL	Load	9	2	4 11/16	4 5/32	1 1/8	1 1/8	5/8	$ 3.55
1-4 B	1/4 SL	"	12	3	6 1/4	5 9/16	1 3/8	1 5/16	3/4	3.55
1-4 C	1/4 LL	Hand	8	5 1/2	7 1/4	5 1/4	1 1/4	1 1/2	11/16	4.20
1-4 D	1/4 LL	"	11	7 1/2	9	7 7/32	1 3/8	1 1/2	3/4	4.90
1-4 E	1/4 SL	Load	21	8	10 3/8	9 23/32	1 1/2	1 1/4	7/8	8.00
1-4 F	1/4 LL	Hand	14	10	11	9 5/16	1 3/8	1 3/4	7/8	5.80
1-4 G	1/4 LL	"	17	13	12 3/4	11 1/8	1 3/4	1 3/8	1	5.35
1-4 H	1/4 SL	Load	24	14	12 3/4	11 3/32	1 3/4	1 3/8	1	13.35
1-4 J	1/4 SL	"	28	11	13 3/8	12 1/2	2	1 1/4	1 1/8	11.55
1-4 L	1/4 SL	"	33	17	15 13/16	15 1/4	2 1/2	2	1 1/4	12.90
1-4 M	1/4 LL	Hand	22	19	16	14 5/8	2 1/16	2	1 1/16	12.00
9-32 A	9/32 SL	Load	15	5	7 13/16	6 11/16	1 1/2	1 7/16	7/8	10.25
9-32 B	9/32 LL	"	25	19	14 1/2	12 19/32	1 3/4	2 3/16	1 1/16	12.45
9-32 C*	9/32 LL	"	28	22	16	14 1/8	2 1/16	2	1 1/8	12.90
9-32 D	9/32 SL	"	41	22	19 3/4	19	2 5/8	2	1 3/8	26.65
9-32 E	9/32 SL	"	48	32	22 3/4	22 7/32	2 3/4	2 1/4	1 1/2	29.35
5-16 A*	5/16 SL	"	18	11	10 1/2	9 3/4	1 3/4	1 3/4	1	5.80
3-8 A*	3/8 SL	"	14	11	9 1/4	8 13/32	2 1/8	2 29/32	1 1/2	29.35
3-8 B*	3/8 SL	"	21	19	13 1/2	12 19/32	2 1/8	1 15/16	1 3/16	28.45
7-16 A*	7/16 LL	"	13	13	11	9 3/4	2 3/8	2 5/16	1 7/8	32.00
7-16 B*	7/16 LL	"	19	24	15 1/4	14 7/32	2 3/8	2 1/8	1 3/8	31.00
1-2 A*	1/2 LL	"	13	23	12 1/2	11 7/8	3	3 3/16	2 1/16	33.80
9-16 A*	9/16 LL	"	13	39	15 5/8	14 3/32	3 1/8	3 1/4	2 1/8	40.00
5-8 A*	5/8 LL	"	13	68	17 5/16	15 1/2	3 1/2	3 31/32	2 3/8	41.80
VA	1/4 LL	Hand	Ribbed	67	23 7/8	20 1/2	2 3/4	2 3/4	1 5/16	39.90
VB	1/4 LL	"	"	92	30	26 3/4	2 3/4	2 9/16	1 5/16	41.80

Notes: LL—Long Link SL—Short Link.
Wheels requiring smaller bore than the Std. sizes listed, add 10% to the price listed.
Wheels requiring larger bore than the sizes listed requiring building up of hub, prices will be quoted upon application.
Items marked * are obsolete and not carried in stock, but can be furnished at the price listed.

YALE SCREW-GEARED CHAIN BLOCKS



Yale Screw-Geared Chain Block

WHERE the higher speed of the Yale Spur-Geared Block is not required, the Yale Screw-Geared Block is recommended. It is well adapted for portable use, and though light, is powerful and durable. It holds the load securely, and will not lower except as the hand chain is pulled. It is operated on the worm wheel and screw principle. The hand chain drives a sprocket wheel directly keyed to the worm shaft; the worm meshes into the worm wheel, which in turn drives the shaft holding the two load sheaves.

The Yale Screw-Geared Block is about one-half as efficient as the Yale Spur-Geared Block and about 25 per cent more efficient than ordinary screw hoists. This Block is operated by a light chain pull. With a 1-ton block, 1 man, by pulling only 87 pounds, can lift 2,000 pounds. However, the relatively large overhaul of hand chain required to lift the load makes it proportionately slow in operation. This is essentially a block for riggers and for temporary and occasional service, as it may be readily moved to meet an emergency. It is adaptable also to horizontal work when pulling heavy loads on rollers or skids. The worm gear makes this Block very compact and good for lifting loads in cramped places and close up to the ceiling.

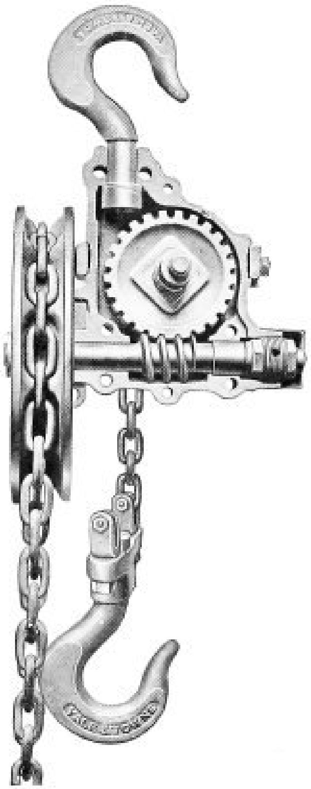
The load is carried by Yale Steel Load Chains, and safety guides are provided to prevent the chains from jumping off the load sheaves. Every precaution has been taken in the design of the bottom crosshead and new demountable shackles to eliminate all possibility of kinking the load chains. It often happens that the bottom hook is turned through the two load chains. When this happens the swiveling demountable shackles between the load chains and the bottom crosshead connection prevent twisting of the chains.

The new demountable shackles enable the hook to be attached to longer load chains without welding. To do this it is only necessary to insert the hardened steel pins through the swiveling shackles and the last link on the load chain.

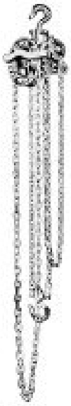
The shape of the steel shackle pin is an example of the attention which has been given to the design and making of Yale Blocks, even in the smaller details. The steel pin, heat-treated and drop-forged, is of a special oval shape to fit the contour of the link and give a full bearing surface.

Standard Yale drop-forged Steel Safety Hooks are used on all Yale Screw-Geared Chain Blocks. The protection these hooks are to the load, the operator and the Block is fully described on page 18.

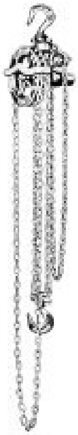
A special process of heat-treating is used on the thrust end of the worm shaft to harden its wearing surface and at the same time improve the strength and wearing quality of the worm itself. The bronze worm wheel and the steel worm (or screw) which have hardened and ground thrust-bearings, run in oil and graphite in a litharge-sealed case, insuring smooth action and thorough lubrication. A special quality of bronze is used in the worm gear which is cast on a square but solid steel shaft.



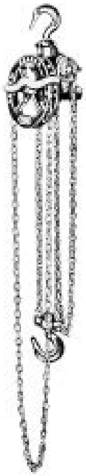
YALE SCREW-GEARED CHAIN BLOCKS



½ Ton



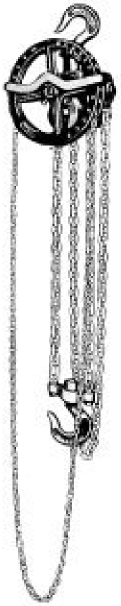
1 Ton



1½ Tons

2 Tons

3 Tons



4 Tons

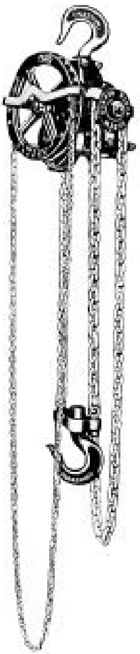
Yale Screw-Geared Blocks—½ Ton to 10 Ton Capacities

Rated Capacity in Tons of 2,240 Pounds	Price Complete	Regular Lift in Feet*	Minimum Distance Between Hooks in Inches	Extra Lift Price per Foot§	Test Load in Tons 2,240 Lbs. to the Ton	Standard Chain Lineal Feet	
						Load	Hand
½	$50.00	8	13	$2.50	¾	18	16
1	60.00	8	16	2.60	1½	18	16
1½	80.00	8	19	2.70	2¼	18	16
2	100.00	9	21	2.80	3	20	18
3	150.00	10	25	3.00	4½	24	21
4	190.00	10	29	3.80	6	24	21
5	280.00	12	31	4.00	7½	30	26
6	360.00	12	33	5.60	9	55	26
8	420.00	12	36	6.00	12	55	26
10	550.00	12	45	6.40	15	57	26

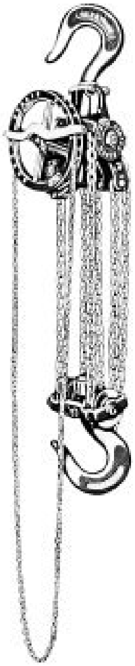
*Figures denote the travel of bottom hook with regular length of chains. No deduction is made for blocks with less than the regular length of chains.

§Extra lift per foot includes sufficient hand and load chain to increase the travel of the lower hook 1 foot.

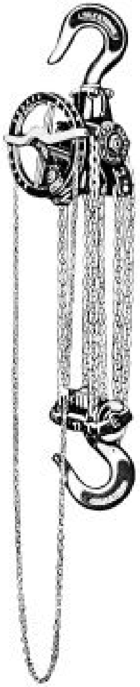
YALE SCREW-GEARED CHAIN BLOCKS



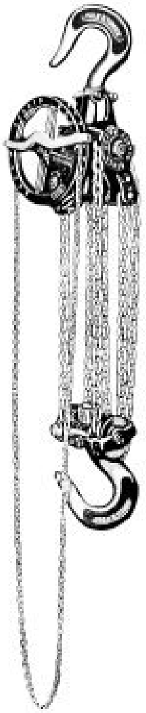
5 Tons



6 Tons



8 Tons



10 Tons

Yale Screw-Geared Blocks—½ Ton to 10 Ton Capacities

Rated Capacity in Tons of 2,240 Pounds	Chain Pull to Lift Full Load	Chain Overhauled to Lift Load one Foot	Shipping Data		
			Net Weight in Pounds	Gross Weight in Pounds	Size of Packing Case in Inches
½	68 lbs.	40 ft.	46	56	16 x 11 x 10
1	87 "	59 "	59	73	17 x 12 x 11
1½	94 "	80 "	81	100	19 x 14 x 13
2	115 "	93 "	104	130	22 x 15 x 13
3	132 "	126 "	187	234	24 x 18 x 18
4	142 "	155 "	221	265	24 x 18 x 18
5	145 "	195 "	331	406	29 x 20 x 21
6	145 "	252 "	310	385	29 x 20 x 21
8	160 "	310 "	416	491	29 x 20 x 21
10	160 "	390 "	578	653	39 x 20 x 21

YALE SCREW-GEARED CHAIN BLOCKS

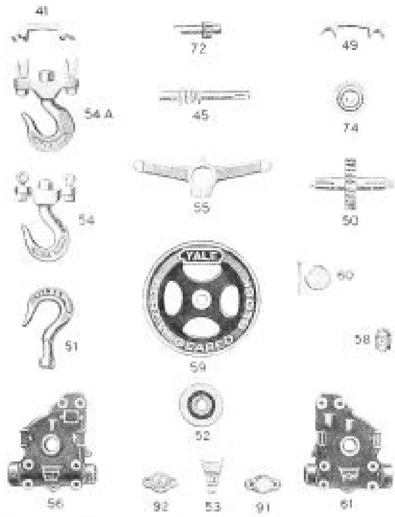


FIG. 31
Parts of Blocks ½ to 5 Tons

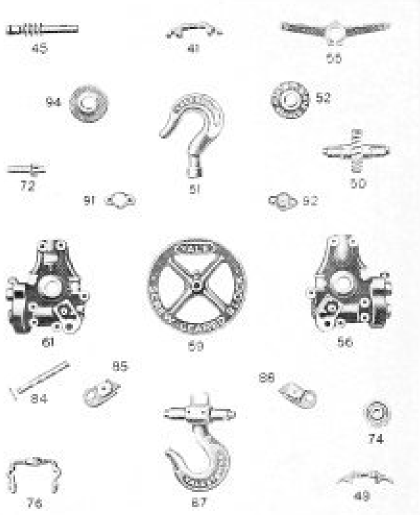


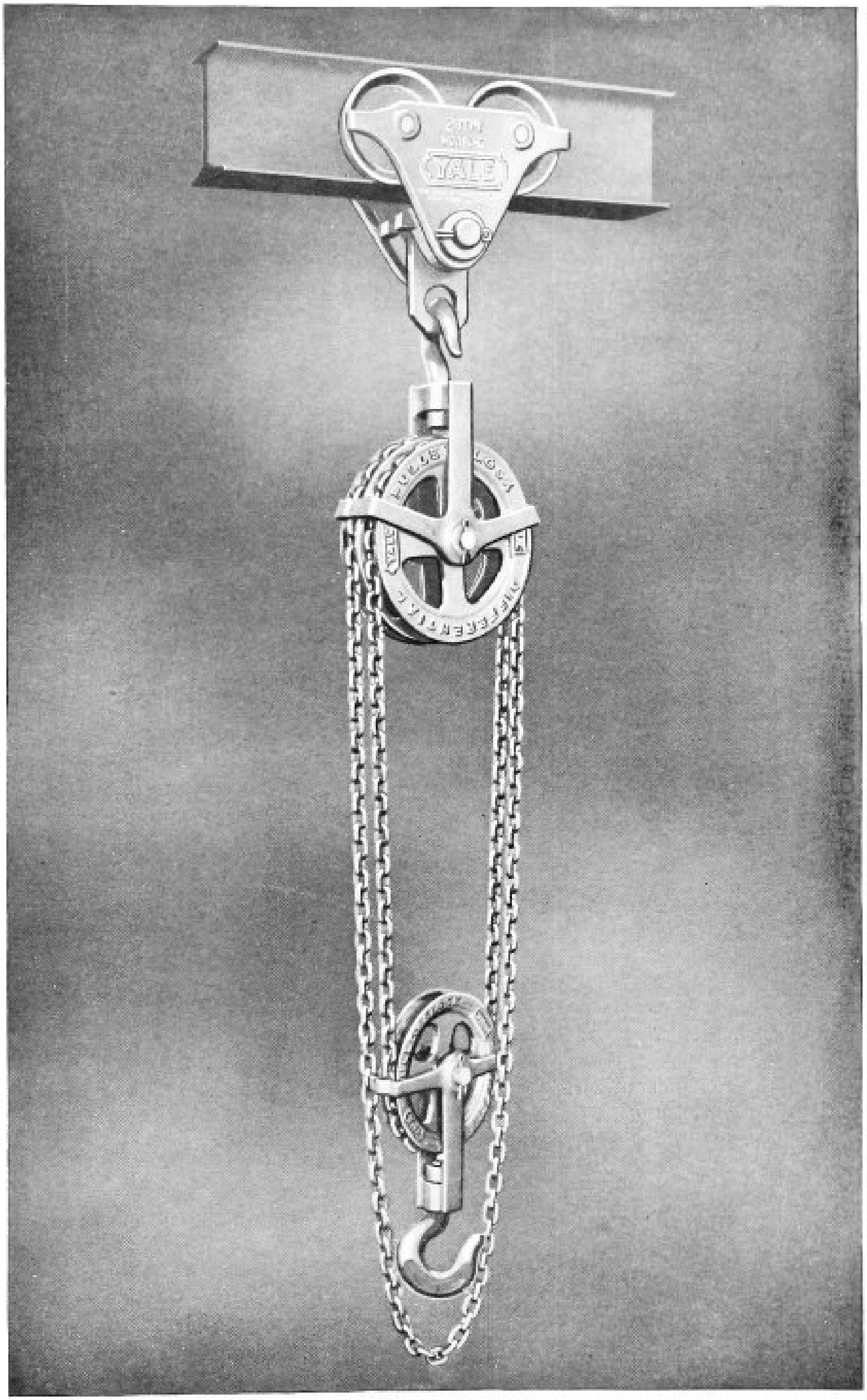
FIG. 32
Parts of Blocks 6 to 10 Tons

Parts for Yale Screw-Geared Blocks

List No.	Name	½ Ton	1 Ton	1½ Tons	2 Tons	3 Tons	4 Tons	5 Tons	6 Tons	8 Tons	10 Tons
41	Load Chain Guide	$0.85	$1.00	$1.70	$2.15	$2.50	$2.85	$4.30	$5.00	$5.70	$7.15
45	Worm and Shaft	4.30	5.70	8.55	10.00	12.85	14.30	17.15	21.45	28.60	42.85
49	Load Chain Guard	1.20	1.45	2.15	2.50	2.85	3.20	4.30	4.65	5.00	5.70
50	Worm Wheel	7.15	8.55	12.15	17.15	24.30	28.60	42.85	45.75	50.00	57.15
51	Top Hook and Nut	1.80	2.85	4.30	6.45	10.70	14.30	21.45	22.85	25.70	42.85
52	Load Sheave, per pair	2.85	3.95	5.70	6.45	8.55	10.70	14.30	14.30	17.15	18.60
53	Strippers, per pair	0.45	0.55	0.85	1.10	1.80	2.15	2.85	—	—	—
54	Bottom Hook Crosshead and Eye Bolts	3.60	5.00	6.45	8.55	14.30	20.00	28.60	—	—	—
54A	Bottom Hook Crosshead with New Detachable Shackles	3.60	5.00	6.45	8.55	14.30	—	—	—	—	—
55	Hand Chain Guide	2.50	2.85	4.30	5.70	6.45	7.85	7.85	9.30	9.30	10.70
56 61	Housing, per pair	9.30	11.45	17.15	21.45	30.00	42.85	85.70	92.85	100.00	120.00
58	Friction Plug	1.45	2.15	2.85	3.60	—	—	—	—	—	—
59	Hand Wheel (see note below)	3.20*	3.95*	5.70*	6.80*	7.85	11.45	12.85	12.85	12.85	17.15
60	Friction Plug Cover	0.70	0.70	1.10	1.45	—	—	—	—	—	—
72	Pinion Shaft	—	—	—	—	5.70	6.45	10.00	10.00	11.45	14.30
74	Gear	—	—	—	—	6.00	6.80	7.50	8.20	8.55	11.45
76	Bottom Guides, per pair	—	—	—	—	—	—	—	10.70	21.45	35.70
84	Clevis Pin	—	—	—	—	—	—	—	0.70	0.70	1.80
85 88	Strippers, per pair	—	—	—	—	—	—	—	2.85	2.85	7.15
87	Bottom Hook and Crosshead	—	—	—	—	—	—	—	64.30	85.70	107.15
91	Friction Plug Cover	—	—	—	—	0.70	0.70	0.70	0.70	0.70	1.45
92	Friction Plug	—	—	—	—	4.30	4.30	5.70	5.70	5.70	8.55
94	Bottom Sheaves, per pair	—	—	—	—	—	—	—	10.00	11.45	14.30
	Load Chain, Steel, per ft.	0.75	0.80	0.85	0.90	1.00	1.10	1.20	1.00	1.10	1.20
	Hand Chain, Steel, per ft.	0.50†	0.50†	0.50†	0.50†	0.50	0.80	0.80	0.50	0.80	0.80

*When ordering hand wheels or hand chain give number of pockets in rim of wheel.
†Hand chain for old model blocks $0.75 per ft., for ½, 1, and 1½ ton sizes.
Note.—When ordering parts it is necessary to give the size of the block in addition to the part number.

YALE DIFFERENTIAL CHAIN BLOCKS



Yale Differential Chain Blocks

THE Yale Differential Chain Block is designed for service where comparatively light loads are handled occasionally. It consists of a pair of pocketed chain wheels above and a single wheel below. The endless chain passes over one upper sheave, down around the bottom block and then over the other upper sheave. The two upper sheaves are in one piece and only vary enough in diameter to make a difference of one chain pocket in their circumferences.

The overhaul of hand chain is about the same as that of the Yale Spur-Geared Chain Block, but the hand chain pull required is about two and a half times as great. The block, however, is light and easily handled, and where men are readily available for emergency or infrequent work, it is desirable equipment. It holds the load securely and will lower only as the hand chain is pulled.

Of the three types of Yale Chain Blocks this has the least number of parts, and on account of its reliability and simplicity finds a wide range of application.

In **garages** a Yale Differential Chain Block is practically indispensable. With a block suspended from a trolley and I-beam track an engine may be lifted out of the chassis by one man and transferred to the work bench, thereby permitting busy mechanics to remain at other work. A Yale Differential Block may be used to elevate the front end of a car so that underneath jobs may be accomplished without the necessity of a man lying under the car. This also means the elimination of the garage pit—an old source of danger and dissatisfaction.

When it is necessary to grease or oil springs use a Yale Differential Block to lift the load off the springs so that the leaves may be spread and grease applied. You will not need troublesome jacks.

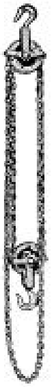
On **wreck cars** the reliability, light weight and simplicity of the Yale Differential Chain Block make it especially suitable.

In many kinds of **building and construction work** there are numerous jobs on which Yale Differential Blocks greatly lighten the labor. For handling concrete forms a small piece of I-beam is easily erected over a ditch and with the addition of blocks and trolleys the forms are moved into place with accuracy and speed. Many contractors are troubled with excavations filling with water and it is difficult to suspend a pump over them without complicated rigging. A Yale Differential Block solves this problem too. In fact, the Yale Differential Block meets all ordinary hoisting needs where the higher power and durability of the Spur-Geared and Screw-Geared types of blocks are not required.

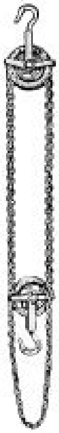
Standard Yale drop-forged Steel Safety Hooks are used on all Yale Differential Chain Blocks. The large, well proportioned sheaves have correctly formed pockets into which the Yale die-formed, electrically welded steel chain (used on all Yale Chain Blocks) meshes accurately. Provision is made for the lubrication of bearings.

Although the cost of the Yale Differential Chain Block is low it is tested and rated with the same liberality which is characteristic of all Yale hoisting equipment. Protection of life and property are prime considerations in its construction.

YALE DIFFERENTIAL CHAIN BLOCKS

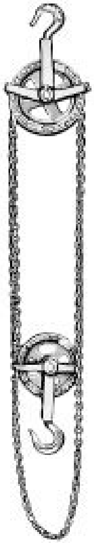


¼ Ton

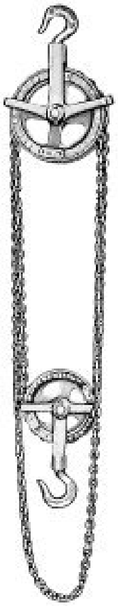


½ Ton

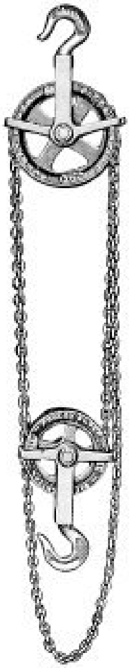
1 Ton



1½ Tons



2 Tons



3 Tons

Yale Differential Blocks—¼ to 3 Ton Capacities

Rated Capacity in Tons of 2,240 Pounds	Net Weight in Pounds	Gross Weight in Pounds	Size of Packing Case	Chain Pull		Total Lineal Feet of Endless Chain	Price Complete	Regular Lift in Feet	Minimum Distance Between Hooks	Extra Lift Price per Foot*	Test Load in Tons of 2,240 Pounds
				Pounds	Feet						
¼	23	28	12 x 8 x 6 ins.	72	18	22	$36.00	6 ft.	17 ins.	$4.80	⅜
½	30	36	14 x 8 x 8 "	122	24	26	42.00	7 "	21 "	4.80	¾
1	50	60	17 x 11 x 9 "	216	30	30	56.00	8 "	26 "	5.00	1½
1½	81	94	20 x 14 x 10 "	246	36	33	72.00	8½ "	32 "	5.40	2¼
2	121	146	24 x 16 x 11 "	308	42	36	90.00	9 "	39 "	5.60	3
3	179	204	27 x 19 x 11 "	557	38	38	120.00	9½ "	44 "	6.00	4½

* Each foot of extra lift includes 4 feet of chain.

Parts List and Prices

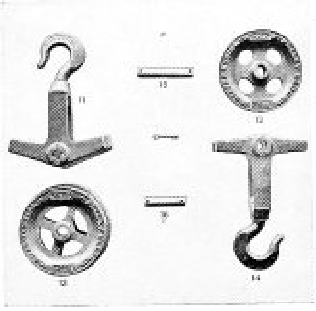
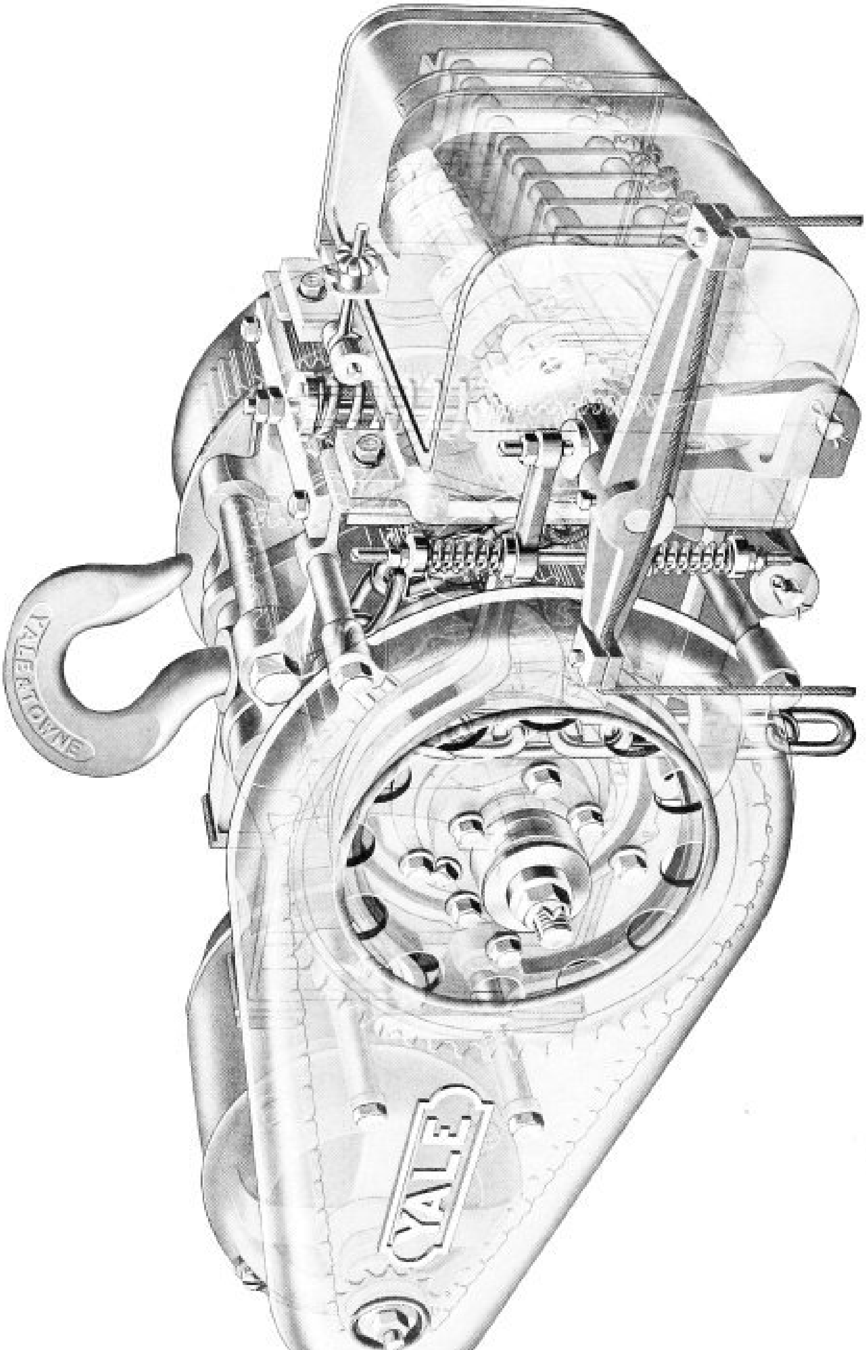


Fig. 33

List No.†	Name of Parts	Capacity in Tons					
		¼	½	1	1½	2	3
11	Top Yoke and Hook.	$5.00	$6.00	$8.50	$11.00	$15.00	$22.00
12	" Sheave..........	6.25	8.00	12.00	16.80	24.00	31.20
13	Bottom Sheave......	1.80	2.40	3.00	3.80	5.00	7.50
14	" Yoke and Hook	4.00	5.00	7.00	9.00	12.00	16.00
15	Top Sheave Pin.....	.80	1.00	1.00	1.20	1.20	1.40
16	Bottom Sheave Pin..	.60	.80	.80	1.00	1.00	1.20
	Regular Chain......	26.40	31.20	37.50	44.60	50.40	57.00

†Note.—When ordering parts it is necessary to give the size of block as well as the list number.



Phantom View of the Yale Electric Chain Hoist, Model 20, Manual Control

YALE

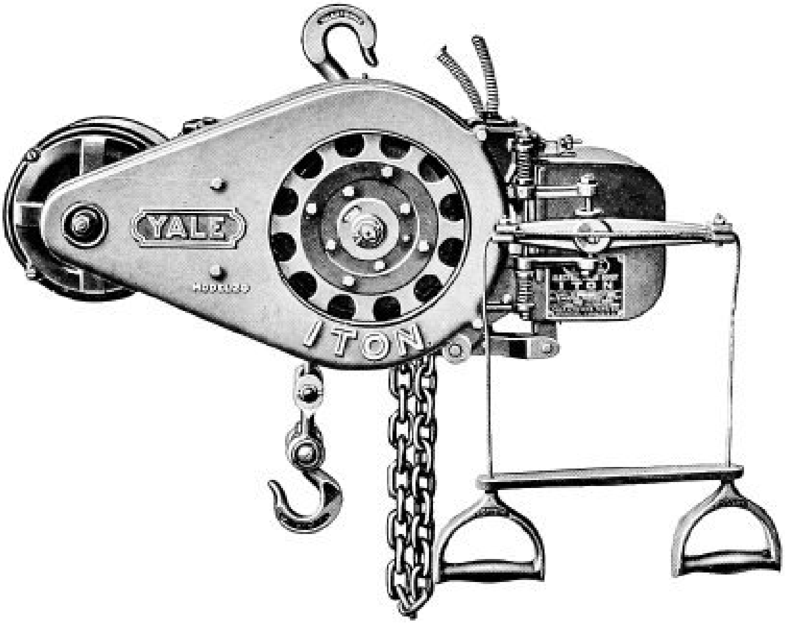
Electric Hoists

THE development and production of Yale Electric Hoists has covered a period of twenty years. Each succeeding modification in mechanical design, or refinement in electrical detail, followed some new development in electrical art, or some basic change in the country's industrial requirements which involved the consideration of heavier loads, longer lifts, more continuous service, higher speeds, etc.

With the more general application of electricity to motor-driven plant equipment, and the increasing appreciation by superintendents, engineers, and plant managers of the broad scope of usefulness of the electric chain hoist, further changes in mechanical and electrical details were essential.

These improvements embodied a reduction in overall dimensions; reduction of the headroom to a minimum; the addition of upper and lower limit safety-stops on the load chain; the use of either the manual or the push-button type of control; the introduction of an interlocking controller and positive braking mechanism; and, finally, the adoption of a hardened and ground roller-ratchet brake mechanism, completely encased and rotating in an oil bath.

As a result of these improvements the Yale Electric Chain Hoist, Model 20, possesses great strength and ruggedness, a powerful motor and transmitting mechanism, a continuous line of steel from "hook to hook," and is the most compact and efficient electric hoist yet produced.



Manual Control Electric Chain Hoist

YALE Model 20 Electric Chain Hoists are strong, sturdy pieces of equipment of wide adaptability. They incorporate many improvements in design—the result of years of unparalleled experience in the manufacture of hoisting equipment.

They are made in three types of suspension; the built-in or trolley type, the clevis connected, and hook type—these three types give the widest range of conditions of overall clearance, headroom, and means of connection to trolley or fixed support. Each type is built in capacities ranging as follows: $\frac{1}{4}$-ton "Quick Speed" giving 36 feet per minute under full load, $\frac{1}{2}$-ton "Quick Speed" giving 34 feet per minute, $\frac{1}{2}$-ton Standard Speed giving 18 feet per minute, 1-ton Standard Speed giving 20 feet per minute and the 2-ton Standard Speed giving 10 feet per minute.

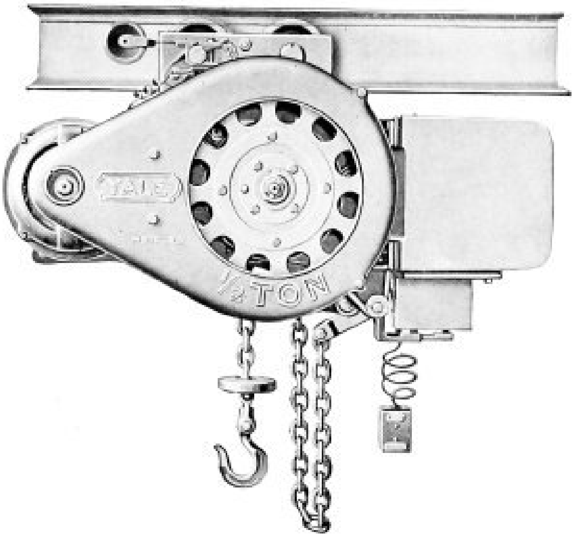
The manual control hoist is equipped with two controller handles, one for raising, and the other for lowering. The controller automatically returns to the neutral or off position the moment either handle is released. A powerful brake is interlocked with the controller in such a way that when the current is applied, the brake arms are released, or when the power is cut off, the brake action is instantaneous.

All of these hoists are built for use on all standard alternating and direct currents, as noted in the table on page 57.

Yale Electric Hoists have an enviable reputation for efficient and safe operation. All steel suspension from hook to hook gives the fundamental ruggedness and strength required under continuous and severe hoisting cycles.

Each Yale Electric Hoist is given complete tests before shipment. These tests include overload, speed, efficiency, power consumption, etc.

The field of application for the electric chain hoist commences where longer lifts, higher speeds, and continuous movement are required, and due to the low electrical power consumption of the Yale Electric Chain Hoist, its high mechanical efficiency and simplicity, it is recognized by owners as the finest all-round electric hoist on the market.



Push Button Control Electric Chain Hoist

UNDER certain conditions it is necessary for the hoist operator to watch the load very carefully, and at times to use one hand in guiding the load during the hoisting and lowering operations. The Push Button Control type of electric hoist has been developed to give the operator the greatest amount of freedom under these conditions. The push buttons are set in a block that is suspended from the hoist on a flexible cable. The block fits easily in the hand and the buttons can be operated by the thumb or one finger.

The raising and lowering circuits are mechanically interlocked so that it is impossible to reverse the direction of movement while the active operating button is depressed.

The action of the solenoid plunger and motor brake is simultaneous and positive. Pushing the raising or lowering button closes the circuit and releases the brake instantly. Releasing the button opens the circuit and applies the motor brake.

On the Push Button Hoist, the limit stops are arranged to open the circuit positively when the load reaches its maximum travel in either direction, so that the solenoid brake is again brought into play. When the limit stops function, either for raising or lowering, the corresponding push button is thrown out of circuit so that it is not possible to operate the motor again until its direction of rotation has been reversed.

The advantages of the Push Button Control type of the Yale Model 20 Electric Chain Hoist may be summed up as follows:

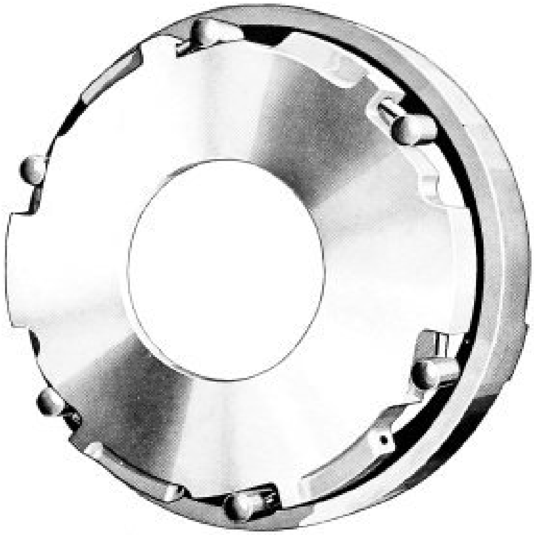
Single hand operation made possible.

Instantaneous starting, stopping and reversing.

Susceptible to load movement control within $\frac{1}{16}$ of an inch.

Positive upper and lower limit stops.

Multiple remote controls which are interlocked in such a manner that it is impossible for one man to interfere with the operation of a hoist when it is being used by another. This multiple control feature in no way interferes with the operation of the limit stops.



Roller Ratchet Mechanism

THE roller ratchet mechanism, identical in both the Push Button and Manual Control types, of the Yale Model 20 Hoist, is without doubt the greatest improvement yet made in the design of an electric chain hoist. Where formerly cast-iron ratchet wheels and ratchet pawls have been used to prevent slippage of the load in hoisting, the Yale Model 20 Electric Hoist embodies a distinctly different principle. A hardened steel ratchet wheel carries hardened steel rollers which run in semi-grease within a tightly enclosed compartment. All surfaces in contact are ground to an accurate finish so that frictional resistance is minimized during the lifting period.

The function of holding the load is accomplished by the advancement of the steel rollers along the evenly distributed inclined wedges of the ratchet wheel. Being applied gradually and simultaneously around the entire circumference of the wheel, they prevent any slippage of the load as soon as the power is shut off.

The outstanding advantages of this mechanism are:

Freedom from Wear

The hardened steel ratchet wheel carries six hardened steel rollers running in grease within a tightly enclosed compartment. All contact surfaces are ground to an accurate finish so that frictional resistance is minimized during the lifting period.

Distributed Ratchet Effect

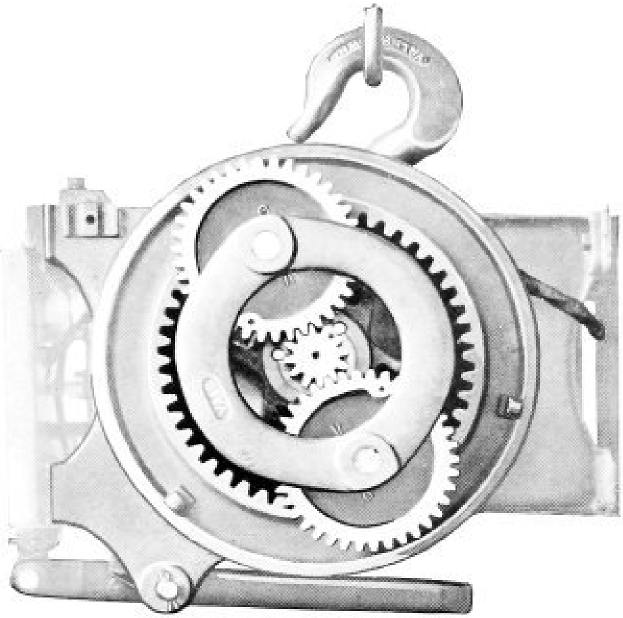
In this mechanism the ratchet wheel is gripped at six points as compared to one in the old pawl action.

No Back Lash

With the single pawl and ratchet, a severe back lash is often experienced. This is impossible with the roller ratchet, as a spring behind each roller forces it into the wedge position as soon as the hoist stops.

Safe

With this roller ratchet being made of hardened steel and gripping at six points, the chances of failure have been practically eliminated.



Planetary Transmission

IN the Yale Model 20 Electric Chain Hoist the same type of planetary gears used in the Yale Spur-Geared Block has been incorporated.

The factors of safety have been increased to meet the greater possibility of shock loads incidental to electric drive, and all parts have been redesigned to meet the high speed requirements of electrically operated hoists. These include the introduction of a bronze bushing in the load sheave, the heat-treatment of the driving pinion and the sealing of the planetary gears in the lubricant-containing gear case.

With this type of gear system the tendency to thrust and to wear the bearings apart—the fatal defect in all other gear systems which causes unequal wear and steadily diminishing efficiency—is neutralized by the counteracting pressure due to the mesh of the intermediate gears with the internal gear.

This internal gear acts as the fulcrum to compel the revolution of the load sheave and lift the load. This whole gear system is simply a train of continuous levers capable of continuous effort, so evenly balanced that the thrust in the gear movement, due to gear pressures under load, distributes the minimum of wear so evenly that the high initial efficiency is never reduced.

Load Braking Mechanism

This device utilizes the well-known operating principle so familiar in Yale Spur-Geared Blocks and is capable of sustaining the load under all conditions without the aid of the control mechanism or motor brake.

It is made of two Raybestos discs, enclosed in the dust-proof lubricating chamber with the roller ratchet. Extremely large surfaces provide for the dissipation of heat developed in lowering the load.

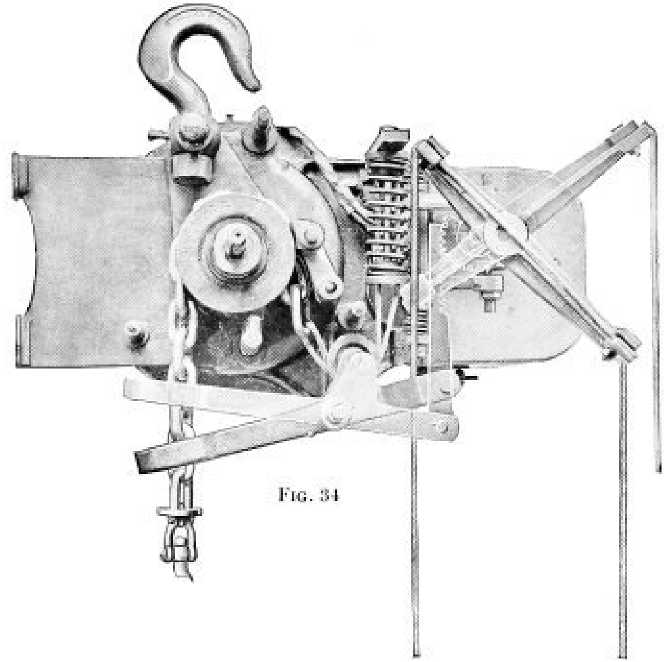


FIG. 34

Upper and Lower Limit Safety Stops

THIS feature of the Model 20 Yale Electric Chain Hoist is a great safety feature which protects not only the load and the hoist but also the careless and unskilled operator.

These stops are directly connected with the controller and operate the drum brake when the load has traveled the full limit in either direction. The upper limit stop protects the hoist and eliminates the danger of dropping the load. The lower limit stop avoids the trouble incidental to rope hoists where the cable winds backward on the drum. An upper limit stop does not in itself provide maximum safety of operation, but when combined with a lower limit stop the protection afforded is complete.

The Motor Brake

The advantages of the Model 20 Electric Chain Hoist "quick stop" motor brake may be summed up in two words—strength and simplicity. The large braking area combined with heavy springs and strong supports make it more than four times as strong as the motor brake in the older designs. Simplicity is secured by the elimination of all electrical and mechanical complications.

The brake is operated positively by the controller handle. When the current is on, the brake arms are lifted clear of the drum so that there is no dragging or friction during the hoisting operation. Immediately the current is shut off, the brake arms clamp tightly around the hoisting drum, producing a powerful, positive braking action.

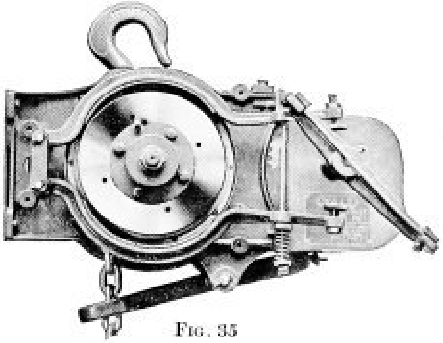


FIG. 35

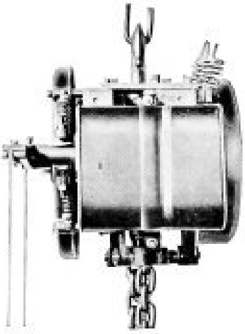


FIG. 36

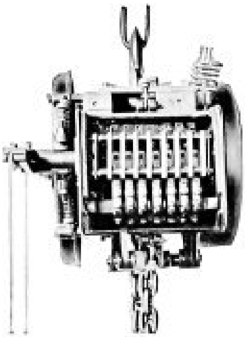


FIG. 37

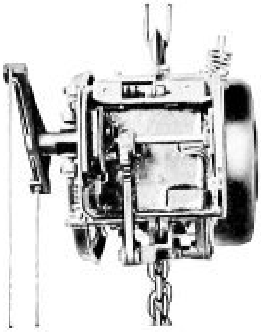


FIG. 38

Controller

CHARACTERISTICS of the Controller used on the Yale Electric Chain Hoist are ruggedness of construction and accessibility of all parts. It is so mounted that it can be replaced in an emergency without interfering with the adjustment of any other part of the hoist.

The construction is such that it is unusual to require any attention other than the occasional replacement of fingers and contacts when the hoist is in severe service.

With all the alternating current types of hoist, and with the direct current type up to 3 h.p., no resistance is used with these controllers and they simply function as reverse switches. In units where 3 h.p., or more, or where 1½ h.p. variable speeds are required, an exceptionally rugged resistance unit is used.

Motor

Yale Electric Chain Hoists are supplied with either direct or alternating current motors of the fully enclosed type.

The d. c. type has series wound characteristics, especially designed for hoisting service and with sufficient overload capacity to meet all the normal requirements of the hoist.

For a.c. service, 2- or 3-phase a squirrel cage type of motor with a high resistance rotor is used. This motor has excellent starting characteristics and is of sufficient capacity to meet the requirements of the hoisting unit.

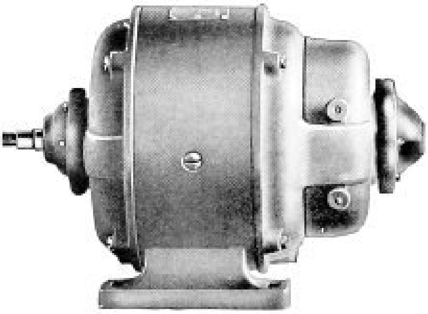


FIG. 39

The motor is so mounted in the hoist that it can be readily reached from either end, or removed without difficulty and without interfering with the rest of the equipment.

YALE ELECTRIC CHAIN HOISTS

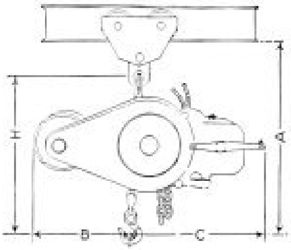


FIG. 40
Hook Type

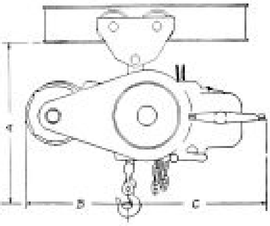


FIG. 41
Clevis Type

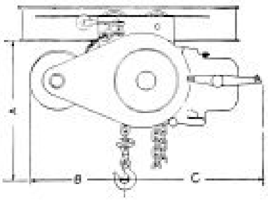


FIG. 42
Trolley Type

Methods of Suspension

WHERE headroom permits, there is no better method of suspending a Yale Electric Chain Hoist than by hooking it into the standard Yale Steel-Plate Trolley—either the Plain or Geared Types. (See pages 67 and 69.) In this manner the greatest flexibility in handling the load is obtainable.

Where headroom is limited, the Clevis type of Yale Trolley suspension may be used, and where closer headroom than that afforded by the clevis method is required, the suspension hook of the hoist may be hooked directly over the equalizing pin of the Yale Steel-Plate Trolley.

Where every inch of headroom counts, the Built-in Trolley type, which utilizes the steel plates of the Yale Steel-Plate Trolley as the suspension members of the Hoist, will be found to be the most satisfactory solution.

Manual Control—Dimensions in Inches

Rated Capacity in Tons	Hook Type					Clevis Type				Hooked Over Equalizing Pin				Trolley Type			
	A	B	C	G	H	A	B	C	G	A	B	C	G	A	B	C	G
½ Ton	25¼	14⅞	18⅝	16⅜	20	22	14⅞	18⅝	16⅜	22	14⅞	18⅝	16⅜	19	14⅞	18⅝	16⅝
1 Ton	32	17⅜	20⅞	18⅝	25	28	17⅜	20⅞	18⅝	$27\frac{3}{16}$	17⅜	20⅞	18⅝	21	17⅜	20⅞	19⅝
2 Ton	40	16	22¼	18⅝	32	35	16	22¼	18⅝	34⅝	16	22¼	18⅝	28	16	22¼	20½

Push Button Control—Dimensions in Inches

Rated Capacity in Tons	Hook Type					Clevis Type				Hooked Over Equalizing Pin				Trolley Type			
	A	B	C	G	H	A	B	C	G	A	B	C	G	A	B	C	G
½ Ton	26¾	14⅞	18⅛	17¼	21	23	14⅞	18⅛	17¼	23	14⅞	18⅛	17¼	19	14⅞	18⅛	17½
1 Ton	33	17⅜	19⅜	20½	26	29	17⅜	19⅜	20½	28½	17⅜	19⅜	20½	21	17⅜	19⅜	20½
2 Ton	42	16	21	20½	34	36	16	21	20½	36	16	21	20½	28	16	21	20½

G—Overall width.

Hoisting and Lowering Speeds in F. P. M.

Rated Capacity in Tons	Direct Current					Alternating Current				
	Hoisting			Lowering		Polyphase		Single Phase		
								Hoisting		
	No Load	Half Load	Full Load	No Load	Full Load	Hoisting	Lowering	No Load	Full Load	Lowering
¼ Ton	72	46	36	72	56	32	34	..	..	..
½ Ton	36	23	18	36	28	16	17	..	..	..
½ Ton Q.S.*	60	40	32	60	45	34	38	50	32	45
1 Ton	40	25	20	40	30	17	19	36	18	28
2 Ton	20	12.5	10	20	15	8.5	9.5	18	9	14

*Q.S. is used as abbreviation for Quick Speed.

YALE ELECTRIC CHAIN HOISTS

List Prices Yale Electric Chain Hoists—Model 20

Manual Control

Item Number	Combination Hoist With	¼-Ton "Quick Speed" ½-Ton Standard Speed		½-Ton "Quick Speed" 1-Ton Standard Speed		2-Ton Standard Speed	
		Stand. 10 ft. Lift	Extra Lift per ft.	Stand. 10 ft. Lift	Extra Lift per ft.	Stand. 10 ft. Lift	Extra Lift per ft.
1	Hook or Clevis	$310.00	$0.92	$417.50	$1.05	$519.00	$1.85
2	Hook or Clevis with Plain Trolley	320.00	.92	430.00	1.05	540.00	1.85
3	Hook or Clevis with Plain Trolley and Current Collectors	330.00	.92	440.00	1.05	550.00	1.85
4	Hook or Clevis with Geared Trolley	342.00	1.62	448.75	1.75	561.50	2.55
5	Hook or Clevis with Geared Trolley and Current Collectors	352.00	1.62	458.75	1.75	571.50	2.55
6	Built-in Trolley, Standard Beam	365.00	.92	490.00	1.05	615.00	1.85
7	Built-in Trolley, Standard Beam and Current Collectors	375.00	.92	500.00	1.05	625.00	1.85
8	Built-in Trolley, Wide Beam	386.00	.92	511.00	1.05	636.00	1.85
9	Built-in Trolley, Wide Beam and Current Collectors	396.00	.92	521.00	1.05	646.00	1.85

*Push Button Control

Item Number	Combination Hoist With	¼-Ton "Quick Speed" ½-Ton Standard Speed		½-Ton "Quick Speed" 1-Ton Standard Speed		2-Ton Standard Speed	
		Stand. 10 ft. Lift	Extra Lift per ft.	Stand. 10 ft. Lift	Extra Lift per ft.	Stand. 10 ft. Lift	Extra Lift per ft.
10	Hook or Clevis	$430.00	$0.92	$537.50	$1.05	$639.00	$1.85
11	Hook or Clevis with Plain Trolley	440.00	.92	550.00	1.05	660.00	1.85
12	Hook or Clevis with Plain Trolley and Current Collectors	450.00	.92	560.00	1.05	670.00	1.85
13	Hook or Clevis with Geared Trolley	462.00	1.62	568.75	1.75	681.50	2.55
14	Hook or Clevis with Geared Trolley and Current Collectors	472.00	1.62	578.75	1.75	691.50	2.55
15	Built-in Trolley, Standard Beam	485.00	.92	610.00	1.05	735.00	1.85
16	Built-in Trolley, Standard Beam and Current Collectors	495.00	.92	620.00	1.05	745.00	1.85
17	Built-in Trolley, Wide Beam	506.00	.92	631.00	1.05	756.00	1.85
18	Built-in Trolley, Wide Beam and Current Collectors	516.00	.92	641.00	1.05	766.00	1.85

Twin Hook—Manual Control Only

Item Number	Combination Hoist With	½-Ton "Quick Speed" 1-Ton Standard Speed			2-Ton Standard Speed		
		Stand. 10 ft. Lift Span 3-5 ft.	** Extra ft. of Span	Extra Lift Price per ft.	Stand. 10 ft. Lift Span 3-5 ft.	** Extra ft. of Span	Extra Lift Price per ft.
19	Hook or Clevis	$692.50	$7.00	$1.70	$794.00	$7.00	$2.65
20	Hook or Clevis with 2 Plain Trolleys	723.00	7.00	1.70	831.50	7.00	2.65
21	Hook or Clevis with 2 Plain Trolleys and Current Collectors	733.00	7.00	1.70	841.50	7.00	2.65
22	Hook or Clevis with 1 Plain and 1 Geared Trolley	747.00	7.00	2.40	851.50	7.00	3.35
23	Hook or Clevis with 1 Plain and 1 Geared Trolley and Current Collectors	757.00	7.00	2.40	861.50	7.00	3.35

*Push Button Control 110 and 220 Volts a. c. or d. c. only. Higher voltage data on application.

**Maximum Span, 12 feet.

NOTES: Trolleys listed with hoists of the hook or clevis type for standard I-beam are adjustable for three sizes larger without extra cost. Trolleys for all other beam section on application.

A. C. Motors—Yale Electric Chain Hoists are regularly supplied with a. c. motors for 110, 220, 440 or 550 volts, 2 or 3 phase, 25, 40, 50 or 60 cycles.

A. C. Single Phase Motors, 110 or 220 volts, 60 cycles, can be furnished on ½-Ton "Quick Speed," 1 and 2-Ton Standard Speed Hoists for either Manual or Push Button Control models at an additional price of $60.00 list.

D. C. Motors are regularly supplied on all 110, 220, 500 Volt direct current hoists.

Variable Speed Controllers—The 1-Ton or 2-Ton Hoists can be supplied with a 4-speed Controller at an additional price of $42.50 each, list, for d. c. service only.

Accessibility, Operation and Maintenance

ONE of the interesting features of Yale Electric Chain Hoists is that of accessibility. By referring to the phantom view of this Hoist on page 48 and to the numerous other pictures throughout this section of the catalog, the ease and quickness with which any part of this Hoist can be reached is apparent. The easy accessibility of all individual parts and assembled units is a notable achievement in electric hoist design and construction.

Yale Electric Chain Hoists are shipped completely assembled and lubricated ready to work, except when oil bearings are used. Oil wells are drained before shipment to protect the motor windings. A RED TAG is attached to each bearing, stating that it is dry and must be filled with oil before being placed in service.

Yale Electric Hoists are so designed that they may be used outdoors without injury, but a shelter should be provided for their protection when they are not in use.

Connections

A diagram of connections is attached to the inside of the controller cover of every Yale Electric Hoist shipped, showing all connections on the Hoist and the resistance values where a rheostat is used.

Fuses

Each Hoist should be protected by fuses or a circuit-breaker and controlled by a switch located near-by and in plain sight. Fuses should be used, or circuit breakers set, about double the full load current marked on the name plate of the Hoist. This may be varied to suit special conditions.

Grounding

Each Hoist on the I-beam or crane runway on which it is operated, should be thoroughly grounded after installing.

Lubrication

Use high-grade oil or grease to protect the bearings and gears and get maximum life from these parts.

Motor bearings of the oil ring type should be filled to the top of the overflow with a good grade of oil. Openings are provided in the top of the bearings for oiling purposes and for convenience when inspecting the rings.

The oil should be drawn off occasionally and renewed. This removes any dirt or grit that may have gotten into the oil wells.

Grease cup bearings should have the cups filled with a good quality of grease containing no acid, dirt, or grit. Do not use vaseline.

Dust and grit must not be allowed to accumulate in the windings or around the bearings. Clean the motor thoroughly at regular intervals and blow out the dust from all parts.

Controller

The controller fingers should be kept tight and adjusted to make the closest contact against the cylinder. When worn or burned they should be replaced promptly. These fingers should be kept lightly greased with vaseline at all times and it is well to dress them with a smooth file occasionally. Keep the inside of the controller clean and free from dirt and moisture.

Shaft

Clean, oiled burlap should be wrapped around the shaft if the armature of a d. c. machine or the rotor of an a. c. machine is out of the Hoist for any length of time. This prevents rusting.

When inserting a shaft into ring-oiled bearings, the rings should be lifted to prevent injury.

Load Chain

The same high standards for steel load chain, adopted for Yale Chain Blocks, are rigidly adhered to in the manufacture of Yale Electric Chain Hoists. This chain is subjected to the same exhaustive test and inspection schedule as described in detail on page 16.

Hooks

Yale Steel Load Hooks are of special steel composition, so shaped and heat-treated that they will open up slowly under successive overloads, giving a fair warning that the load limit of the hoist has been reached. Yale Hooks are fully described on page 18.

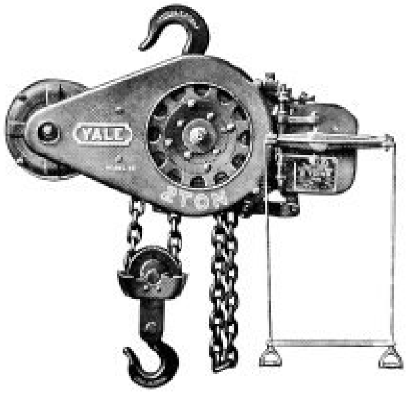


FIG. 43

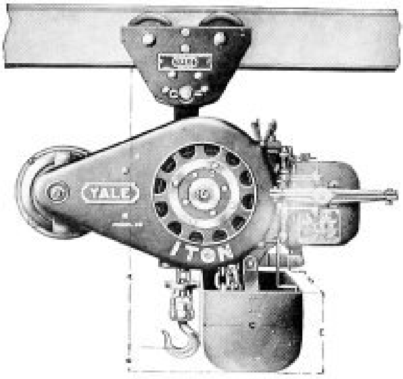


FIG. 44

The Two-Ton Electric Chain Hoist

A SPECIAL chain guide which conforms to the contour of the pocketed sheave wheel is used on the 2-ton Yale Electric Chain Hoist to hold the load chain in the pockets of the lower sheave at all times. Thus the chain is prevented from dropping out of the pockets even though the load hook and a length of chain should be deposited on the floor.

The lower load sheave is designed to permit the load to be raised to the maximum height on account of the small headroom required.

The 2-ton Yale Electric Chain Hoist has incorporated in it the many advantages discussed on the preceding pages.

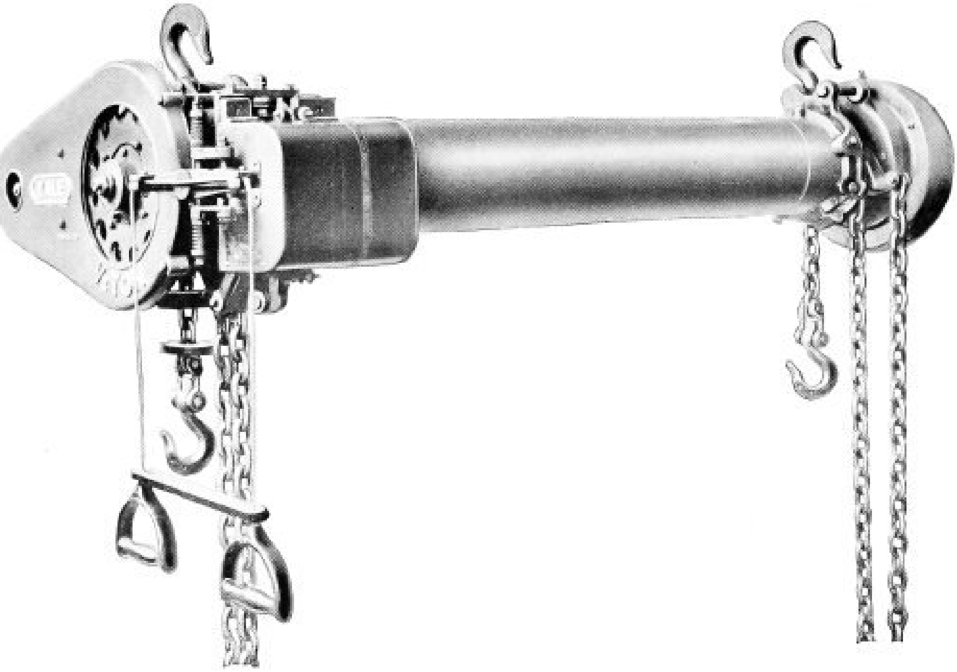
Chain Containers

THE chain containers designed especially for use with Yale Electric Chain Hoists find their application where it is desirable to keep the load chain from hanging down in the work when lifting pots of molten metal or other liquids, baskets, or bundles of perishable materials or rolls of paper. The use of the chain container also keeps an unusually long load chain off the floor when the Hoist is passing through a doorway or along an overhead I-beam track for considerable distances.

The Yale chain container is so placed that the load chain feeds vertically into the upper load sheave, yet its size or arrangement does not interfere in any way with elevating the load to the maximum height.

Dimensions of Container for Slack Chain as Applied to Yale Electric Chain Hoists

Capacity	Ft. Lift	E	B	Manual Control		Push Button Control		A
				C	D	C	D	
½-Ton	20	8"	4"	8½"	12"	11½"	12"	See dimension "A" on fig. 41, page 56
	30	10½"	6½"	8½"	12"	11½"	12"	
	35	12"	8"	8½"	12"	11½"	12"	
	42	14"	10"	8½"	12"	11½"	12"	
1-Ton	20	8½"	3"	10"	14"	13"	13⅝"	
	30	12"	6½"	10"	14"	13"	13⅝"	
	35	14"	8½"	10"	14"	13"	13⅝"	
	40	16"	10½"	10"	14"	13"	13⅝"	
2-Ton	10	8½"	....	10"	14"	13"	13⅝"	
	15	12"		10"	14"	13"	13⅝"	
	17	14"	1½"	10"	14"	13"	13⅝"	
	20	16"	3½"	10"	14"	13"	13⅝"	



Yale Twin-Hook Electric Chain Hoist

THE Yale Twin-Hook Electric Chain Hoist is so designed that a pull on the control handles raises or lowers the two hooks simultaneously. The safety features common to all Yale Electric Chain Hoists are incorporated in this type. The supporting members are so arranged and of such generous proportions that the full rated capacity of the load can be carried on either hook or divided between the two hooks. The space between hooks can be supplied any distance from 3 to 12 feet apart in capacities of ½-ton Quick Speed and 1 and 2-ton Standard Speed.

The Yale Twin-Hook Electric Chain Hoist can be attached to the trolley either by the hook or clevis method, but because of the necessary arrangement of the drive it cannot be furnished in the "built-in" or trolley type of construction.

This Hoist is usually connected to Yale Plain Steel-Plate Trolleys, but it is sometimes desirable to use one geared and one plain trolley and on occasions two geared trolleys can be furnished so connected that one hand chain will operate both units.

For the operation of the hoisting unit one set of current collectors is all that is required.

Twin-Hook Electric Chain Hoists are used frequently in ice plant service for lifting 4 or more cans at the one time. The twin-load hooks keep the load level, even though the weight be greater at one end than at the other.

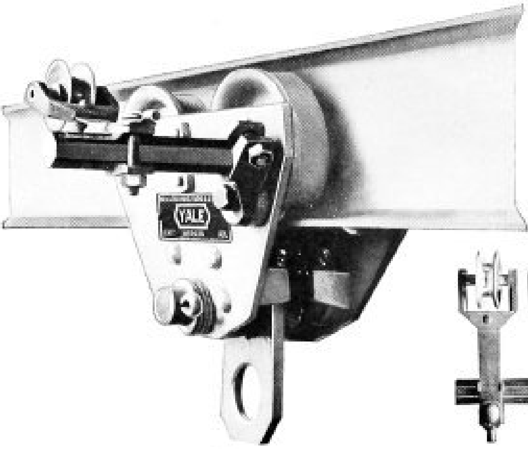


Fig. 45

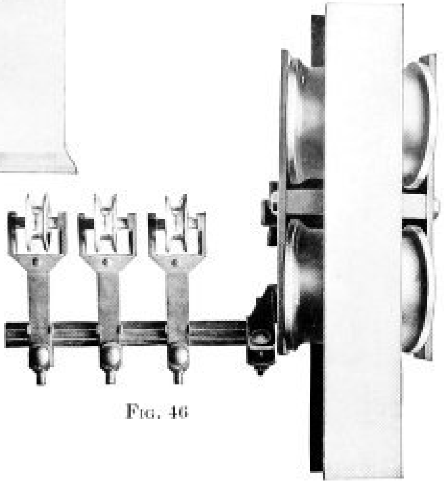


Fig. 46

Yale Electric Current Collectors

THE new Yale Electric Current Collector shown here is of the wheel type. It is flexible to horizontal and vertical variations of the conductor bar or wire paralleling a straight or curved I-beam track and can readily be used on an Electric Hoist which must operate through switches or turntables. It is equally useful on the Yale Plain or Geared Steel-Plate Trolleys and is recommended wherever a **flexible cable** is not used to conduct the d. c. or a. c. electric current, all voltages, to the electric hoist.

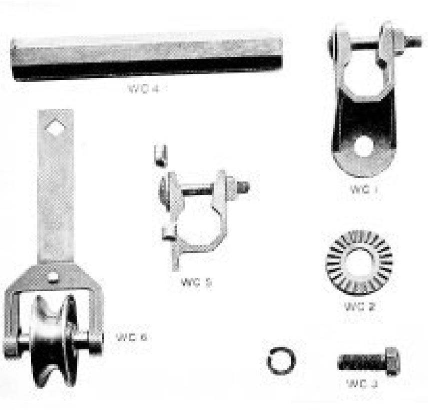


Fig. 47

The new Yale Electric Current Collector is used in 1, 2, 3 and 4-wheel combinations.

Two wheels must be used for direct current, or for single phase alternating current.

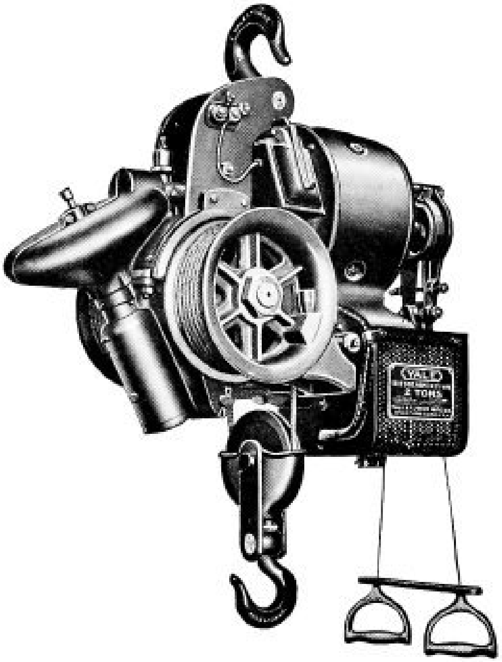
Three or four wheels must be used for 2 phase alternating current according to the number of wires in the circuit.

Three wheels must be used for 3 phase alternating current.

The arrangement of the current collector wheels is optional; that is on a 3 wire system one wheel can be attached to one side of the trolley and the 2 remaining collectors can be fastened on the opposite side. This is the standard method of application.

Prices of Yale Wheel Type Current Collectors

Part No.	Name of Part	List Price Each
	Current Collector Complete (Parts WC1, 2, 3, 4, 5, 6)	$6.75
	Additional Current Collectors (WC5 and WC6)	4.50
WC 1	Collector Support Bracket	1.50
WC 2	Collector Bevel Washer	.30
WC 3	Support Bracket Bolt and Washer	.08
WC 4	Collector Arm (Wood)	.50
WC 5	Collector Bracket	1.65
WC 6	Collector Wheel and Spring Assembled	4.00



Yale Electric Wire Rope Hoist

SUPPLEMENTING the Yale line of Electric Chain Hoists and rounding out a complete line of hoisting equipment, are the Yale Electric Wire Rope Hoists.

The Yale Electric Wire Rope Hoists are high-grade machines, designed to give continuous service at minimum cost. They are efficient, simple in construction, durable and safe, giving the operator a dependable lifting device for heavy duty work.

These Hoists lift the load on 2, 4 or 6 parts of plow steel rope.

The internal moving parts are few and strong, consisting of the armature shaft with bevel pinion, worm shaft with large bevel gear, and drum shaft with worm gear. This worm gearing operates in a bath of oil. The load is sustained at all times by the worm gear mechanism. A mechanical brake is used to stop the momentum of the armature shaft quickly. All steel suspension is used in these, as in all Yale Electric Hoists.

The Yale Electric Wire Rope Hoist is installed by simply hooking it into a trolley and attaching the wires to carry the current. Any workman about the plant can operate it.

They are built in capacities of 1, 2, 4, 5, 6, and 10 tons; standard for direct current 110, 220, and 500 volts; for alternating current 220 volts, 2 or 3 phase, 60 cycles, and 440 volts, 3 phase, 60 cycles. They are not made for single-phase. Complete information and prices will be sent upon receipt of service specifications and electrical characteristics to be met.

YALE

Trolleys

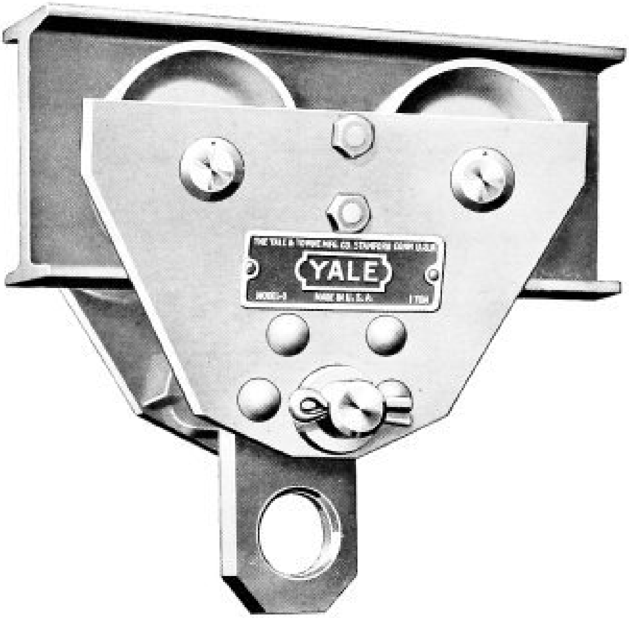
THE new Yale Steel-Plate Trolleys are so strong and so flexible in design that they meet every trolley need.

In order to demonstrate the *strength* of these trolleys the following overload test was made:

A Yale *2-ton* Steel-Plate Trolley was tested successively under various overloads until finally it supported 14½-tons without breaking. Under this load the 10-inch I-beam track, on which this Trolley ran, bent so that the load was deposited on the ground. A careful examination of the Trolley, after supporting a load of over *seven times* its rated capacity, showed that the wheels, axles, bearings and other important parts were uninjured.

The factor of ease in operation, or flexibility, is another deciding factor in making any trolley installation. The roller bearings, and the scientific design of these Yale Steel-Plate Trolleys provide the utmost flexibility in use. They roll with exceptional ease, and will traverse a curve of short radius without binding, the non-rigid construction permitting each wheel flange to take a position at all times adjusted to the curve and slope of the I-beam flange.

By using Yale Steel-Plate Trolleys, in connection with Yale Steel-Suspension Hoists, a "Line of Steel" from the I-beam to the load is provided, thus giving utmost protection to both operator and load.



Yale Steel-Plate Trolley

THE useful range of work of any hoist is multiplied many times by suspending it from a trolley running on an overhead I-beam track. To the familiar range of motion of the hoist in a vertical plane is added a wide freedom of motion in a horizontal plane; so that the picking up of materials from one location and the accurate placing of them at another point in the shop or yard, is actually reduced to a phase of mechanical material handling.

Supported on a fixed track, the Yale Steel-Plate Trolley will quickly and easily carry the load to any point along the line of the track without rehandling. When the trolley operates on a movable I-beam, arranged as a swinging jib crane or an overhead traveling crane, a much greater area of floor space can be covered.

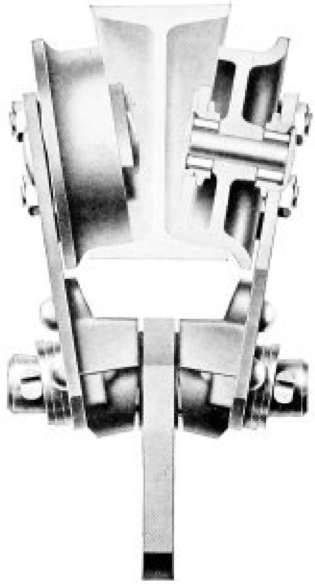
The Yale Steel-Plate Trolley is built with heat-treated, hardened, and ground roller bearings and is designed with certain distinct advantages which render it by far the most practical, as well as easy running trolley made. It combines exceptional strength with the much desired feature of flexibility. The construction of this Yale Trolley has been tested thoroughly, both in the laboratory and in actual shop installations all over the world, and the results have proved its superiority.

Most trolleys that possess strength are of rigid construction, and those that have the necessary flexibility to permit of easy running on curved tracks are weak. These difficulties have now been entirely overcome by the Yale design.

Yale Steel-Plate Trolleys excel in strength, lightness, durability, ease of operation, and resistance to accidental injury from careless use. They are adapted to varying widths of I-beam flange, and may readily be arranged for use where headroom is greatly restricted.

The scientific design permits of the utmost flexibility in use. These Trolleys can be run around a curve of short radius without binding, since the non-rigid construction permits each wheel flange to take a position at all times suited to the curve of the I-beam flange.

YALE STEEL-PLATE TROLLEYS



On this and the following pages are detailed illustrations showing cross-section and separated parts views. From these the exceptional construction features of the Yale Steel-Plate Roller Bearing Trolley can be readily understood. They show how the wheels are mounted on roller bearings and attached to the side plates, and how the side plates in turn are connected together by the single equalizing pin which supports the suspension clevis. Note the spreader castings riveted to each plate. These give a very large bearing surface for the equalizing pin and are so shaped as to protect the Trolley and act as a bumper, engaging the track-stop on the lower flange at the end of the I-beam track.

Yale Steel-Plate Trolleys, while especially designed for use with Yale Chain Blocks and Electric Hoists, and exactly proportioned to give the greatest flexibility of operation with Yale Hoisting Equipment, can be used with all makes of chain blocks and hoists on the market. These Trolleys are used also as a means of overhead conveyance on I-beam track where equipment is transferred during the course of manufacture from one process to another. In one interesting installation more than 400 Yale Steel-Plate Trolleys are used to carry finished castings of a wide variety of sizes on an overhead I-beam track to huge paint tanks where the castings are painted by dipping and then run over a continuation of the I-beam track to the drying room.

Details of Parts:

By referring to the illustrations on pages 64, 65 and 66, and the detailed descriptions given below of each part of the Yale Steel-Plate Trolley, its unusual construction may be more readily appreciated. Its all-steel suspension parts are an absolute guarantee of safety to both operator and load.

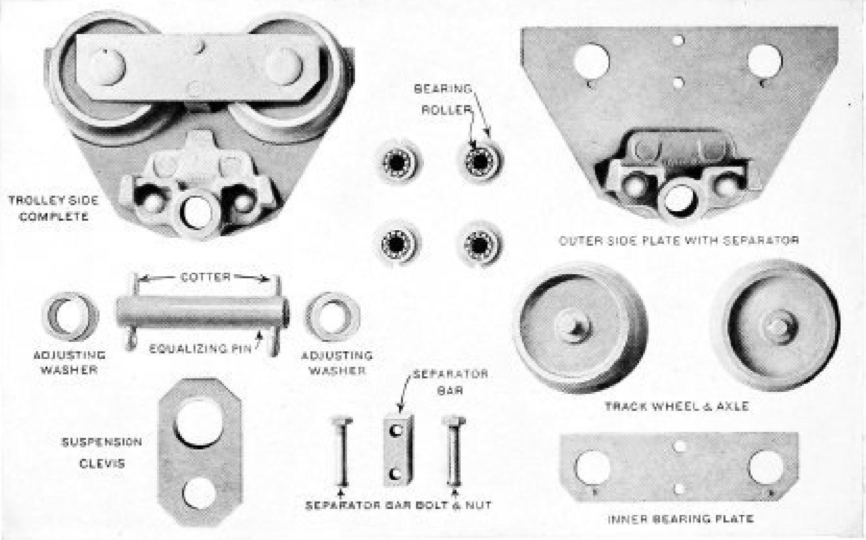
Side Plates

These trolleys are built with wide steel-plate suspension members, extended in order to protect the flange of the wheel from damage by collision, joined at a single pivotal point by an equalizing pin.

Equalizing Pin

This pin is made of cold-rolled steel. It connects the two halves of the trolley *flexibly*, allowing the side plates and trolley wheels to equalize perfectly any irregularity on the track. It is of ample

YALE STEEL-PLATE TROLLEYS



size to take many times the strain of the maximum load which will ordinarily be placed upon the trolley.

Separator Castings

The separator castings, riveted to each plate, give a very large bearing surface on the equalizing pin and are so shaped as to protect the trolley and act as a bumper which engages the track-stop on the *lower flange* of the I-beam.

Wheels

The chilled-iron wheel-treads are made to conform exactly to the shape of the I-beam flange. This highly desirable feature gives increased track bearing surface with a minimum of resistance to motion. The fact that the treads of these wheels are of chilled-iron greatly increases their life where abrasive dust would otherwise rapidly cut down the efficient service and hinder the easy rolling of the trolley.

Axles

These are made of hardened and ground steel and pressed into the wheels. They are supported by the inner bearing plate and each of the four axles turn on two self-oiling roller bearings.

Roller Bearings

The eight heat-treated, hardened and ground roller bearings used in Yale Steel-Plate Trolleys assure easy lateral motion. The grease chamber is so designed as to prevent dust and grit from reaching the bearings and will hold sufficient oil and grease to keep the bearings lubricated for six months.

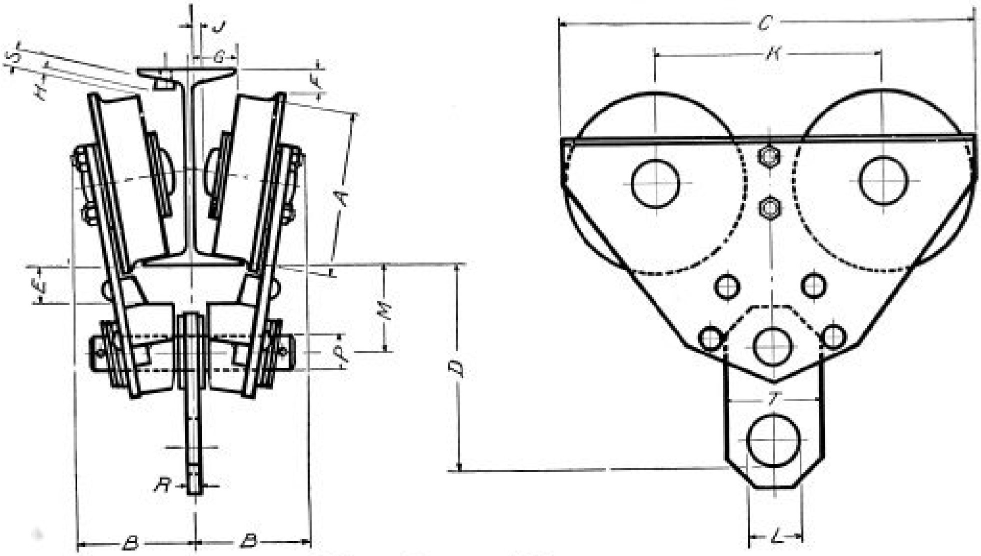
Sturdy but Flexible Construction

The four wheels of the Yale Trolleys are set with the axles parallel to the I-beam flange, and the steel axles, pressed into the wheel hub, run on eight completely enclosed roller bearings which are mounted on the outside steel-plate suspension member and an inner supporting plate. There is practically no bending strain on the axle. This construction insures a much better bearing surface and greatly reduces friction. The Yale Steel-Plate Trolley is notable for its very easy lateral motion both when first installed and after years of service. All bearings are packed with grease and ample provision is made for oiling in service.

Adjustable Sizes

All Yale Steel-Plate Trolleys can be widened to accommodate the flange of an I-beam up to three sizes larger than standard by simply changing the position of the heavy washers on the equalizing pin. Three adjustments for headroom are also provided so that the Hoist may be hooked directly over the equalizing pin, attached by a clevis connection, or, in the regular way, hooked into the eye of the suspension clevis. In any position, the chain block is free to swing through a complete circle.

YALE STEEL-PLATE TROLLEYS



Dimensions and Clearances

Cap. Tons	Standard Size I-Beam	Min. Rad. Curve	Inches															
			A	B	C	D	E	F	G	H	J	K	L	M	P	R	S	T
1/4	4 in.—7.7 lbs.	1′—6″	3	2 3/4	9	5 5/16	1 7/16	9/16	1	3/32	1/4	5	1 9/16	2 3/8	3/4	3/8	1/2	2 1/2
1/2	5 "—10.0 "	1′—9″	3 3/4	3	10 3/8	5 5/8	1 7/16	13/16	1 1/16	1/8	1/4	5 5/8	1 13/16	2 1/2	1	3/8	5/8	3
1	6 "—12.5 "	1′—9″	4 3/4	3 5/8	13 1/4	7	1 7/16	3/4	1 1/4	1/8	5/16	7 1/4	2 1/16	3	1 3/8	1/2	5/8	3 1/2
1 1/2	7 "—15.3 "	2′—6″	5 1/2	4 1/8	15 1/2	7 3/4	1 7/16	1	1 1/2	1/4	5/16	8.4	2 1/16	3 1/2	1 1/2	5/8	13/16	3 1/2
2	8 "—18.4 "	3′—0″	6 1/2	4 5/8	17	8 1/8	1 7/16	1	1 3/4	3/16	3/8	9.4	2 1/4	3 1/2	1 3/4	3/4	13/16	4
3	9 "—21.8 "	3′—6″	7 1/4	4 7/8	20	8 7/8	1 7/16	1 3/16	1 7/8	5/16	5/16	11.2	2 1/4	3 1/2	2	3/4	1	4
4	10 "—25.4 "	4′—0″	8 1/4	5 3/8	22	8 7/8	1 7/16	1 1/8	2 1/8	3/16	1/2	12.2	2 1/2	3 5/8	2 1/4	3/4	1	4
5	12 "—31.8 "	4′—6″	10	5 5/8	26	9 1/8	1 7/16	1 1/4	2 3/8	1/4	1/2	14	2 3/4	3 3/4	2 1/2	7/8	1 3/16	5 1/2
6	12 "—31.8 "	5′—0″	10	6	26	10 13/16	1 7/16	1 1/4	2 1/2	1/4	1/2	14	3 1/8	4 1/4	2 5/8	7/8	1 1/4	6
8	15 "—42.9 "	5′—0″	12	6 1/2	29	12 13/16	1 7/16	2 1/4	2 3/4	1 3/16	1/2	15.4	3 5/8	4 1/2	3	7/8	2 1/16	6 1/2
10	15 "—42.9 "	5′—0″	13	6 3/4	31 1/2	13 3/8	1 7/16	1 1/4	3	5/16	3/8	16.6	4 1/4	4 3/4	3 1/8	7/8	1 3/16	7 1/2

Information and Prices

Capacity in Tons		Adjustable for I-Beams	Greatest Distance between Supports	Smallest Radius for Curve	Direct Push to Start Fully Loaded Trolley Along Beam	Net Weight of Trolley	Diameter of Tread of Wheels	Package Sizes Inches	Price Plain Trolley
1/4		4, 5, 6, 7	10 ft.	18 in.	25 lbs.	25 lbs.	3 in.	7 x 5 3/4 x 9 1/4	$22.00
1/2	Roller Bearing	5, 6, 7, 8	13 "	21 "	18 "	30 "	3 3/4 "	8 x 6 3/4 x 10 1/2	25.00
1		6, 7, 8, 9	14 "	21 "	20 "	50 "	4 3/4 "	9 3/4 x 7 1/2 x 13 1/2	29.00
1 1/2		7, 8, 9, 10	14 "	30 "	26 "	95 "	5 1/2 "	11 1/2 x 8 1/2 x 15 3/4	39.00
2		8, 9, 10, 12	15 "	36 "	30 "	115 "	6 1/2 "	12 3/4 x 9 1/2 x 17 1/4	46.00
3		9, 10, 12, 15	15 "	42 "	40 "	150 "	7 1/4 "	14 x 10 x 20 1/4	61.00
4		10, 12, 15, 18	15 "	48 "	50 "	210 "	8 1/4 "	15 x 11 x 22 1/4	85.00
5		12, 15, 18, 20	17 "	54 "	60 "	270 "	10 "	17 1/2 x 11 1/2 x 26 1/4	109.00
6		12, 15, 18, 20, 24	21 "	60 "	70 "	350 "	10 "	18 1/4 x 12 1/4 x 26 1/4	134.00
8		15, 18, 20, 24	28 "	60 "	90 "	420 "	12 "	20 3/4 x 13 1/4 x 29 1/4	170.00
10		15, 18, 20, 24	32 "	60 "	115 "	550 "	13 "	22 x 13 3/4 x 32	218.00
12		on Application	29 "	60 "	150 "	600 "	13 "	On Application	295.00
15			26 "	96 "	180 "	1100 "	18 "		485.00
20			21 "	120 "	260 "	1200 "	18 "		585.00

Plain trolleys to fit larger sized I-beams than specified, $4.00 list extra.

YALE STEEL-PLATE TROLLEYS

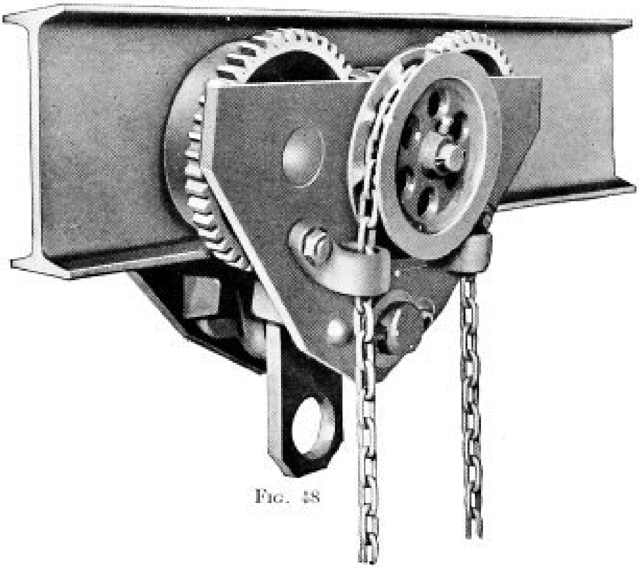


Fig. 48

Yale Geared Steel-Plate Trolley

WHERE very heavy loads are carried on an overhead trolley or where there is normally a considerable distance between the load and the trolley, it is often quite desirable to reduce the "pendulum effect," or swing, in starting and stopping the load. Under these conditions the Yale Geared Steel-Plate Trolley is especially recommended.

The Yale Geared Steel-Plate Trolley is the same in construction as the Yale Plain Steel-Plate Trolley in every respect except that the two trolley wheels on one side are fitted with spur-geared flanges engaging a small central pinion. The pinion, operated by a chain wheel and hand chain, provides positive lateral motion for the trolley and enables the operator to start and stop the trolley as slowly or rapidly as desired.

The Yale Geared Steel-Plate Trolley may be converted into the Plain Steel-Plate Trolley at any time by merely removing the pinion, plate box and chain wheel.

In machine tool work, and in the handling of heavy loads where accurate placement is required, the Yale Geared Trolleys with Yale Chain Blocks give the operator accurate control of the movement of the load both horizontally and vertically.

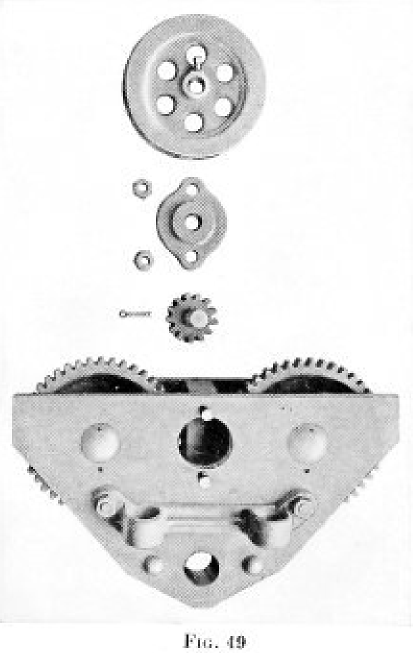
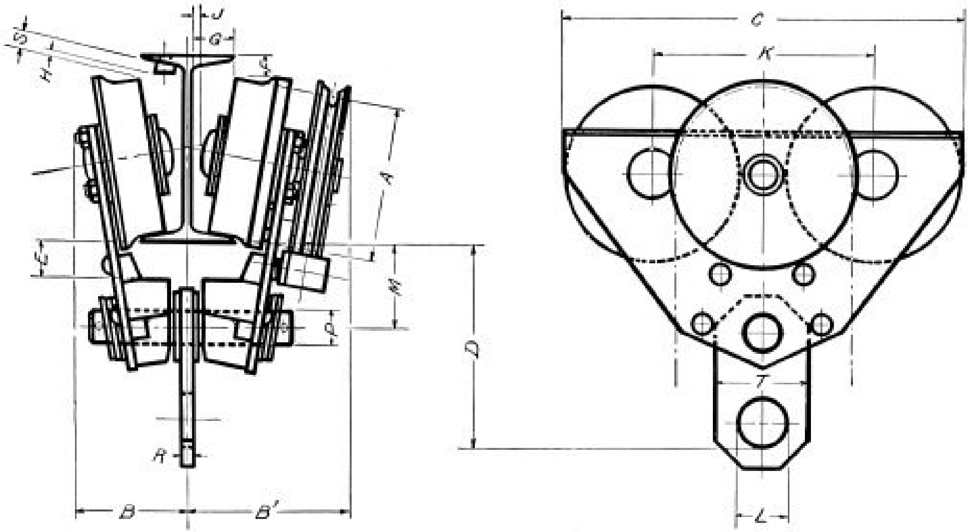


Fig. 49

YALE STEEL-PLATE TROLLEYS



Dimensions and Clearances

Cap. Tons	Standard Size I-Beam	Min. Rad. Curve	Inches																	
			A	B	B'	C	D	E	F	G	H	J	K	L	M	P	R	S	T
1	6 in. —12.5 lbs.	1'—9"	$4\frac{3}{4}$	$3\frac{5}{8}$	6	$13\frac{1}{4}$	7	$1\frac{7}{16}$	$\frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$\frac{5}{16}$	$7\frac{1}{4}$	$2\frac{1}{16}$	3	$1\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$3\frac{1}{2}$
$1\frac{1}{2}$	7 " —15.3 "	2 —6	$5\frac{1}{2}$	$4\frac{1}{8}$	$6\frac{3}{8}$	16	$7\frac{3}{4}$	$1\frac{7}{16}$	$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	8.4	$2\frac{1}{16}$	$3\frac{1}{2}$	$1\frac{1}{2}$	$\frac{5}{8}$	$\frac{13}{16}$	$3\frac{1}{2}$
2	8 " —18.4 "	3 —0	$6\frac{1}{2}$	$4\frac{5}{8}$	$7\frac{1}{8}$	18	$8\frac{1}{8}$	$1\frac{7}{16}$	$\frac{3}{4}$	$1\frac{3}{4}$	$\frac{3}{16}$	$\frac{5}{16}$	9.4	$2\frac{1}{4}$	$3\frac{1}{2}$	$1\frac{3}{4}$	$\frac{3}{4}$	$\frac{13}{16}$	4
3	9 " —21.8 "	3 —6	$7\frac{1}{4}$	$4\frac{7}{8}$	$7\frac{3}{8}$	$20\frac{1}{2}$	$8\frac{7}{8}$	$1\frac{7}{16}$	$\frac{7}{8}$	$1\frac{7}{8}$	$\frac{5}{16}$	$\frac{3}{8}$	11.2	$2\frac{1}{4}$	$3\frac{1}{2}$	2	$\frac{3}{4}$	1	4
4	10 " —25.4 "	4 —0	$8\frac{1}{4}$	$5\frac{3}{8}$	$8\frac{1}{4}$	$22\frac{1}{2}$	$8\frac{7}{8}$	$1\frac{7}{16}$	$\frac{3}{4}$	$2\frac{1}{8}$	$\frac{3}{16}$	$\frac{7}{16}$	12.2	$2\frac{1}{2}$	$3\frac{5}{8}$	$2\frac{1}{4}$	$\frac{3}{4}$	1	4
5	12 " —31.8 "	4 —6	10	$5\frac{5}{8}$	$8\frac{5}{8}$	26	$9\frac{1}{8}$	$1\frac{7}{16}$	1	$2\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	14	$2\frac{3}{4}$	$3\frac{3}{4}$	$2\frac{1}{2}$	$\frac{7}{8}$	$1\frac{3}{16}$	$5\frac{1}{2}$
6	12 " —31.8 "	5 —0	10	6	9	26	$10\frac{13}{16}$	$1\frac{7}{16}$	$1\frac{1}{16}$	$2\frac{1}{2}$	$\frac{1}{4}$	$\frac{7}{16}$	14	$3\frac{1}{8}$	$4\frac{1}{4}$	$2\frac{5}{8}$	$\frac{7}{8}$	$1\frac{1}{4}$	6
8	15 " —42.9 "	5 —0	12	$6\frac{1}{2}$	$9\frac{3}{8}$	29	$12\frac{13}{16}$	$1\frac{7}{16}$	$2\frac{1}{4}$	$2\frac{3}{4}$	$1\frac{3}{16}$	$\frac{7}{16}$	15.4	$3\frac{5}{8}$	$4\frac{1}{2}$	3	$\frac{7}{8}$	$2\frac{1}{16}$	$6\frac{1}{2}$
10	15 " —42.9 "	5 —0	13	$6\frac{3}{4}$	$9\frac{3}{4}$	$31\frac{1}{2}$	$13\frac{3}{8}$	$1\frac{7}{16}$	$1\frac{1}{4}$	3	$\frac{5}{16}$	$\frac{3}{8}$	16.6	$4\frac{1}{4}$	$4\frac{3}{4}$	$3\frac{1}{8}$	$\frac{7}{8}$	$1\frac{3}{16}$	$7\frac{1}{2}$

Information and Prices

Capacity in Tons		Adjustable for I-Beams	Greatest Distance Between Supports	Standard Reach of Hand Chain from Under Side of I-Beam	Smallest Radius for Curve	Pull on Hand Chain to Move Load	Weight in Pounds	Diameter of Tread of Wheels	Package Sizes Inches	Price Geared Trolley
1	Roller Bearing	6, 7, 8, 9	14 ft.	8 ft. 8 in.	21 in.	8 lbs.	90	4¼ in.	10 x 9¾x13½	$59.00
1½		7, 8, 9, 10	14 "	9 " 0 "	30 "	9 "	140	5½ "	12 x11 x16¼	68.00
2		8, 9, 10, 12	15 "	10 " 5 "	36 "	11 "	170	6½ "	13 x12 x18¾	77.00
3		9, 10, 12, 15	15 "	12 " 3 "	42 "	13 "	180	7¼ "	14 x12½x20¾	97.00
4		10, 12, 15, 18	15 "	12 " 6 "	48 "	18 "	350	8¼ "	15½x13¾x22¾	134.00
5		12, 15, 18, 20	17 "	15 " 3 "	54 "	20 "	360	10 "	17½x14½x26¼	170.00
6		12, 15, 18, 20, 24	21 "	15 " 5 "	60 "	23 "	460	10 "	18¾x15¼x26¼	206.00
8		15, 18, 20, 24	28 "	16 " 2 "	60 "	28 "	540	12 "	21 x16 x29¼	291.00
10		15, 18, 20, 24	32 "	16 " 9 "	60 "	35 "	650	13 "	22¼x16¾x32	352.00
12		On Applica-tion	29 "	16 " 9 "	60 "	42 "	700	13 "	On Applica-tion	On Applica-tion
15			26 "	17 " 5 "	96 "	44 "	1400	18 "		
20			21 "	18 "10 "	120 "	49 "	1500	18 "		

Geared trolleys to fit on larger sized I-Beams than specified, $4.00 list extra.

YALE STEEL-PLATE TROLLEYS

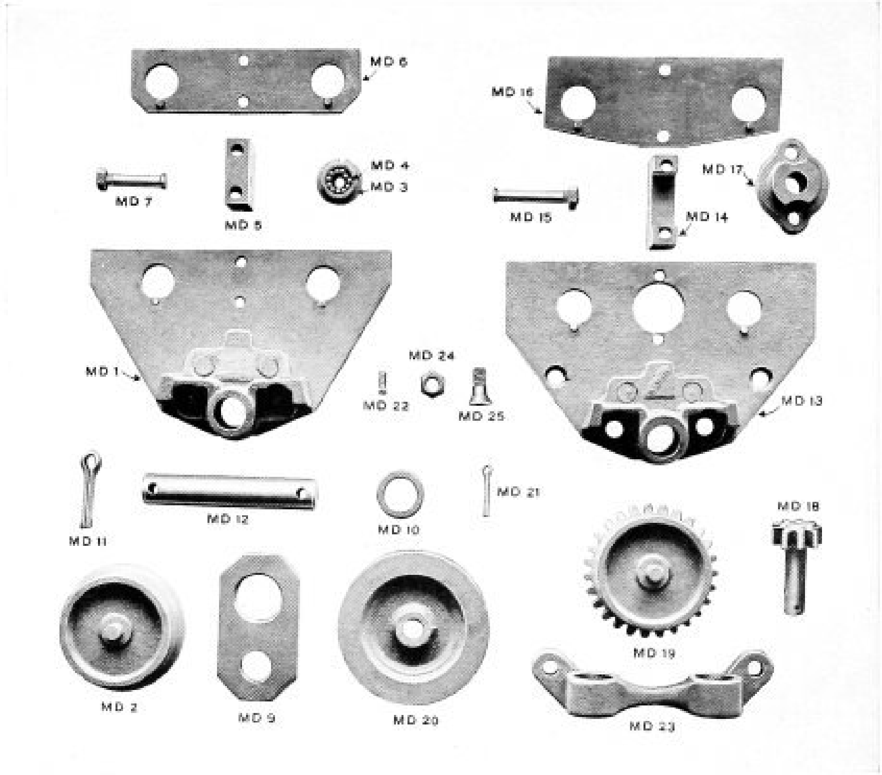


Fig. 50

List Prices of Parts for Yale Plain and Geared Steel-Plate Trolleys

List No.	Name of Part	Capacity of Trolley in Tons										
		¼	½	1	1½	2	3	4	5	6	8	10
MD 1	Outer Side Plate with separator	Prices on application										
MD 2	Track Wheel and Axle	$1.20	1.80	2.20	2.65	3.40	4.35	7.30	9.10	9.10	17.00	20.60
MD 3	Bearings	.....	1.35	1.35	1.85	1.85	2.55	3.90	3.90	4.25	5.60	8.50
MD 4	Rollers	Prices on application										
MD 5	Separator Bar											
MD 6	Inner Bearing Plate											
MD 7	Separator Bar Bolt & Nut											
MD 8	Equalizing Pin											
MD 9	Suspension Clevis											
MD 10	Adjusting Washer											
MD 11	Equalizing Pin Cotter											
MD 12	Equalizing Pin											
MD 13	Geared Side Plate											
MD 14	Geared Separator Bar											
MD 15	Geared Separator Bar Bolt and Nut											
MD 16	Geared Inner Bearing Plate											
MD 17	Plate Box											
MD 18	Pinion and Shaft	.....	.....	7.05	7.05	7.05	10.45	10.45	10.45	10.45	10.45	10.45
MD 19	Geared Track Wheel & Axle	.....	.....	2.90	3.65	4.85	7.30	9.70	13.35	13.35	19.40	23.00
MD 20	Hand Chain Wheel	.....	.....	3.65	6.05	6.05	6.05	8.50	8.50	8.50	9.70	9.70
MD 21	Pinion Shaft Cotter	Prices on application										
MD 22	Chain Wheel Set Screw											
MD 23	Chain Guard	.....	.....	.75	.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MD 24	Key Head Bolt Nut	Prices on application										
MD 25	Key Head Bolt											

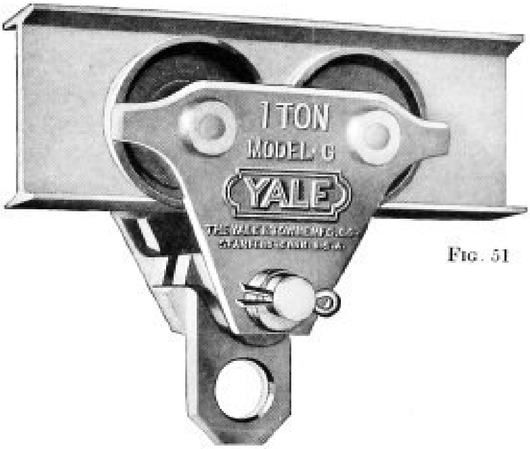


FIG. 51

Yale Cast-Iron Trolley

THE Yale Cast-Iron Trolley is made to meet the occasional demand for a lower priced Yale Trolley that will satisfy ordinary requirements as to load-carrying capacity, safety, and ability to withstand abuse.

These trolleys have heavy cast-iron side frames, extended laterally to protect the wheel flange. The iron wheels mounted on steel axles give unusual freedom for this type of trolley with a minimum of frictional resistance.

The two cast-iron side frames, connected by a heavy equalizing pin, are free to adjust themselves to all track inequalities and permit the trolley readily to negotiate track curves of short radius.

Like the standard Yale Steel-Plate Trolley, the Yale Cast-Iron Trolley is provided with separator castings which act as bumpers in connection with turntable stops, and prevent the trolley from leaving the free end of the track, no matter what size of I-beam may be used.

Adjustment for width of I-beam flange to three sizes larger than standard is provided in the heavy washers which may be placed either inside or outside the side plates, as required. Where low headroom conditions have to be met, the chain block can be hooked directly over the equalizing pin.

Flexibility in respect to headroom and width of flange are the important and highly desirable features of all Yale Trolleys. The basic advantages of standardized design, the result of many years' experience, is incorporated in this trolley.

The Yale Cast-Iron Trolley will be found very satisfactory for many ordinary requirements. Its construction assures the equal distribution of the load on all four wheels at all times, and capacity loads can easily and safely be moved with it. It is not designed, however, to withstand the continuous hard service for which the Yale Steel-Plate Trolley is built.

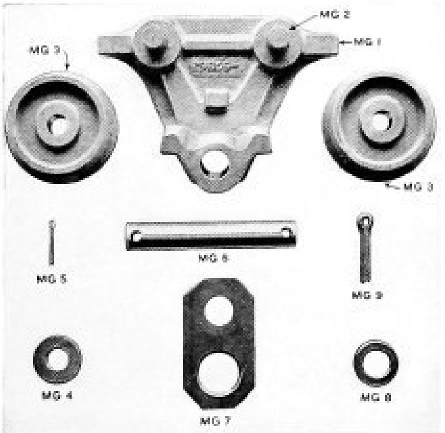
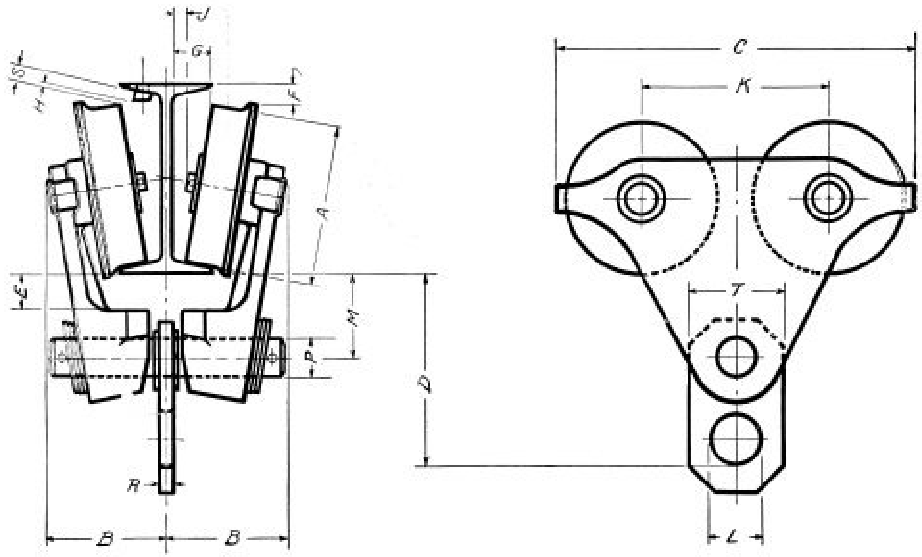


FIG. 52

Parts of Yale Cast-Iron Trolley

Part No.	Name	Required per Trolley	Prices Each
MG1	Trolley frame	2	on appli-cation
MG2	Track wheel axle	4	
MG3	Track wheel	4	
MG4	Track wheel axle washer	4	
MG5	Track wheel axle cotter	4	
MG6	Equalizing pin	1	
MG7	Suspension clevis	1	
MG8	Adjusting washer	8	
MG9	Equalizing pin cotter	2	

YALE CAST-IRON TROLLEYS

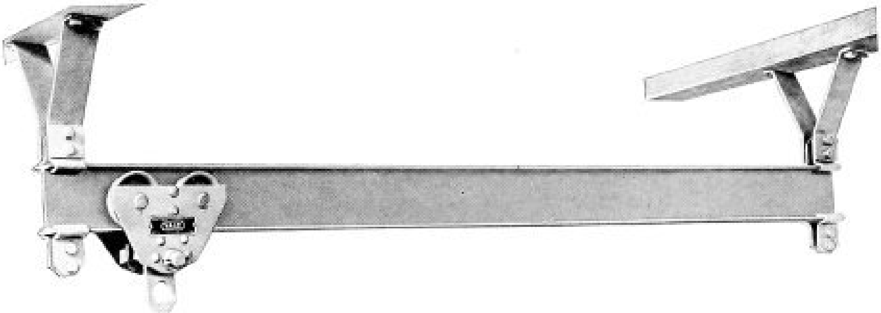


Dimensions and Clearances

Cap. Tons	Standard Size I-Beam	Min. Rad. Curve	Inches															
			A	B	C	D	E	F	G	H	J	K	L	M	P	R	S	T
1/4	4 in.—7.7 lbs	1 ft.—6 in.	3	3	7 7/8	5 5/16	1 7/16	5/8	7/8	3/32	3/8	4	1 9/16	2 3/8	3/4	3/8	1/2	2 1/2
1/2	5 "—10.0 "	1 " —9 "	3 3/4	3 3/8	9 3/4	5 5/8	1 7/16	13/16	15/16	1/8	5/16	5	1 13/16	2 1/2	1	3/8	5/8	3
1	6 "—12.5 "	1 " —9 "	4 3/4	4 1/4	11 1/2	7	1 7/16	3/4	1 1/4	1/8	1/2	5 3/4	2 1/16	3	1 3/8	1/2	5/8	3 1/2
1 1/2	7 "—15.3 "	2 " —6 "	5 1/2	4 3/8	13 1/4	7 3/4	1 7/16	1	1 1/2	1/4	1/2	6 3/4	2 1/16	3 1/2	1 1/2	5/8	13/16	3 1/2
2	8 "—18.4 "	3 " —0 "	6 1/2	4 7/8	15 1/2	8 1/8	1 7/16	1	1 3/4	1/4	5/8	8	2 1/4	3 1/2	1 3/4	3/4	13/16	4

Information and Prices

Capacity in Tons	Adjustable for I-beams	Net Weight Pounds	Smallest Radius Curve Inches	Distance from I-Beam to lower Edge of Eye in Clevis Inches	Package Sizes Inches	Price
1/4	4, 5, 6, 7	16	18	5 5/16	7 x 6 1/4 x 8	$11.00
1/2	5, 6, 7, 8	27	21	5 5/8	8 x 7 x 10	15.00
1	6, 7, 8, 9	46	21	7	10 x 8 3/4 x 11 3/4	22.00
1 1/2	7, 8, 9, 10	66	30	7 3/4	11 1/4 x 9 x 13 1/2	27.00
2	8, 9, 10, 12	84	36	8 1/8	12 3/4 x 10 x 15 3/4	34.00



I-Beam Trolley Track Sections

SECTIONS of I-beam track as shown above in connection with Yale Trolleys and Hoists are frequently used over machine tools for placing the load. Their lengths are governed by the distance between the overhead girders from which the track is suspended.

For the great majority of overhead track installations, I-beam track is to be preferred. In addition to its inherent strength, I-beam track is available in practically every town where industrial plants are located. Its first cost compares very favorably with that of light-weight track, when the expense of auxiliary supporting beams, girders, and extra suspension clamps required in a light-weight track installation is considered.

For the average installation of sections of overhead I-beam track the Yale V-type hanger, as shown on page 74, can be used. Where this hanger is not suitable, one of the methods of attachment shown on page 76 will meet all other requirements. In ordering overhead track and supports a sketch showing the following information should be given:

(a) Distance between overhead supports.

(b) Necessary drop to clear all interferences.

(c) An idea as to the type of overhead supports needed.

With the above data definite recommendations can be given.

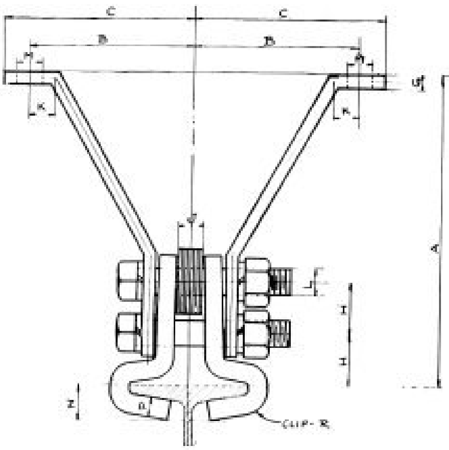
By attaching two Yale Universal I-beam Hanger Clamps to the underside of the I-beam track, as shown in the above illustration, efficient stops are provided. This eliminates the necessity of drilling the beam and inserting bolts for stops.

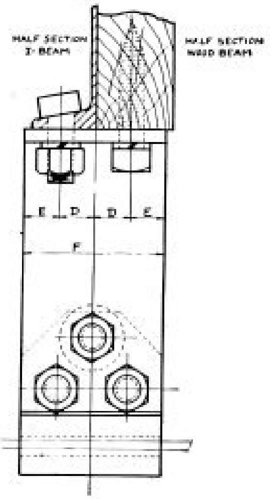
Distance Between Supports

For Standard Light-Weight Section I-Beams With Hand-Operated Trolleys

Size of I-Beam	Load on Trolley in Tons for Single I-Beam												
	1/4	1/2	1	1 1/2	2	3	4	5	6	7	8	9	10
4 in.	10												
5 "	13	14											
6 "	15	15	14										
7 "	17	17	17	15									
8 "	20	20	20	18	16								
9 "	......	......	21	21	18	16							
10 "	......	......	23	23	22	18	16						
12 "	......	......	......	25	25	22	19	18	16				
15 "	......	......	......	......	27	27	26	23	21	19	18	16	15
18 "	......	......	......	......	......	......	......	30	28	25	24	22	21
20 "	......	......	......	......	......	......	......	......	31	30	28	26	25
24 "	......	......	......	......	......	......	......	......	......	......	35	34	32

YALE I-BEAM TROLLEY TRACK





Yale Universal I-Beam Hanger Clamp

THE economical transportation of loads by means of overhead I-beam track is dependent upon a carefully designed and properly supported system. The new Yale Hanger Clamps are designed to properly support overhead I-beam track so as to give the maximum service with the most economical operation of hoists and trolleys.

The V-type Strap Hanger is a combination of Yale Standard Hanger Clamps and a double strap spread to give rigid support by dividing the strain on the supporting girder, timber or ceiling. It can be modified to cover practically every hanger application by twisting or spreading the suspension straps. The clamps are die-forged and come in three sizes to fit the different sizes of I-beams.

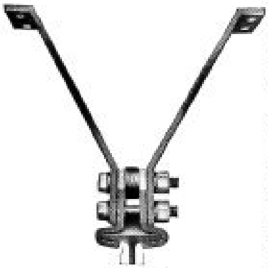


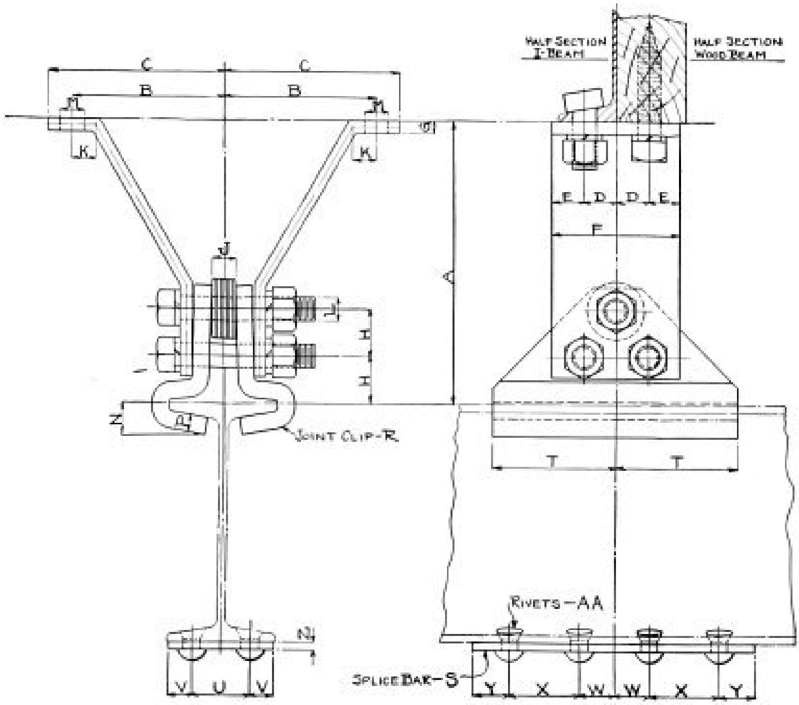
FIG. 53

A complete set of clamps with suspension members is furnished for each of the three sizes given in the table. This hanger can be made to fit various I-beam widths by simply changing the position of the washers. The illustrations show the application of the V-Type Strap Hanger to I-beam or timber.

It should be noted that only the V-Type Strap Hanger is made up complete. For all other suggested uses given on the following page, the clamps only are supplied.

V-Type Hanger With Clamp and Bolts Complete

Type No.	Cap. in Tons	Size of I-Beam Inches	Distance Between Hangers in Feet		Dimensions in Inches														Est. Wt. Lbs.	List Price Complete	List Price Clamps etc., Less Hangers
			Hand Trolleys	Elec. Trol. Hoist	A	B	C	D	E	F	G	H	J	K	L	M	N	P			
1	1/2	5	14	12	9	4 9/16	5 5/16	15/16	13/16	3 1/2	3/8	1 1/2	1/2	3/4	5/8	11/16	13/16	3/8	18	$7.10	$3.70
1	1	6	14	13	9	4 11/16	5 7/16	15/16	13/16	3 1/2	3/8	1 1/2	3/4	3/4	5/8	11/16	13/16	3/8	18	7.10	3.70
1	1 1/2	7	15	13	9	4 13/16	5 9/16	15/16	13/16	3 1/2	3/8	1 1/2	1	3/4	5/8	11/16	7/8	3/8	18	7.10	3.70
2	2	8	16	13	10 1/2	5 1/2	6 3/8	1 1/8	1 1/8	4 1/2	7/16	1 3/4	3/4	7/8	3/4	13/16	1	1/2	32	9.15	5.15
2	3	9	16	13	10 1/2	5 5/8	6 1/2	1 1/8	1 1/8	4 1/2	7/16	1 3/4	1	7/8	3/4	13/16	1	1/2	32	9.15	5.15
3	4	10	16	13	12	6 1/2	7 1/2	1 3/8	1 3/8	5 1/2	1/2	2	1	1	1	1 1/16	1 5/16	3/4	51	13.55	8.15
3	5	12	18	15	12	6 5/8	7 5/8	1 3/8	1 3/8	5 1/2	1/2	2	1 1/4	1	1	1 1/16	1 3/8	3/4	51	13.55	8.15
3	6	12	16	14	12	6 5/8	7 5/8	1 3/8	1 3/8	5 1/2	1/2	2	1 1/4	1	1	1 1/16	1 3/8	3/4	51	13.55	8.15



Yale Joint Clamp and Splice Plate

THIS is a combination of the Yale Standard Joint Clamp and Splice Plate of sufficient capacity to support and align both ends of the connecting beam.

Any of the illustrated strap or rod suspension members can be used with this type of joint.

This type of Joint Clamp can be located at any point in the I-beam system where a joint is necessary.

Joint Clamp, Bolts and Splice Plate

Capacity in Tons	Size of I-beam In.	Dist. Between Hangers in Ft.		Dimensions in Inches																						Est. Wt. lbs.	List Prices	List Prices Less Hangers
		Hand Trolleys ft.	Elec. Trol. Hoist ft.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	T	U	V	W	X	Y	Z	AA			
½	5	14	12	9	4 7/16	5 5/16	11/16	13/16	3½	3/8	1½	½	¾	5/8	11/16	15/16	3/8	3¾	1 7/8	9/16	1	2	1	¼	½	27	$9.25	$5.85
1	6	14	13	9	4 11/16	5 7/16	13/16	13/16	3½	3/8	1½	¾	¾	5/8	11/16	13/16	3/8	3¾	1 7/8	9/16	1	2	1	¼	½	27	9.25	5.85
1½	7	15	13	9	4 13/16	5 9/16	15/16	13/16	3½	3/8	1½	1	¾	5/8	11/16	7/8	3/8	3¾	1 7/8	9/16	1	2	1	¼	½	27	9.25	5.85
2	8	16	13	10½	5½	6 3/8	1 1/8	1 1/8	4½	7/16	1¾	¾	7/8	¾	13/16	1	½	4½	2 3/8	7/8	1¼	2 5/8	1¼	¼	5/8	46	12.00	8.00
3	9	16	13	10½	5 5/8	6½	1 1/8	1 3/8	4½	7/16	1¾	1	7/8	¾	13/16	1	½	4½	2 3/8	7/8	1¼	2 5/8	1¼	¼	5/8	46	12.00	8.00
4	10	16	13	12	6½	7½	1 3/8	1 3/8	5½	½	2	1	1	1	1 1/16	1 5/16	¾	5¼	2½	1	1½	3	1½	5/16	¾	89	18.00	12.60
5	12	18	15	12	6 5/8	7 5/8	1 3/8	1 3/8	5½	½	2	1¾	1	1	1 1/16	1 3/8	¾	5¼	2½	1	1½	3	1½	5/16	¾	89	18.00	12.60
6	12	16	14	12	6 5/8	7 5/8	1 3/8	1 3/8	5½	½	2	1¾	1	1	1 1/16	1 3/8	¾	5¼	2½	1	1½	3	1½	5/16	¾	80	18.00	12.60

Applications of the Yale Universal Hanger Clamp

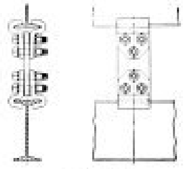


Fig. 54
Strap Hanger

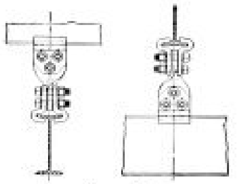


Fig. 55
Twisted Strap Hanger

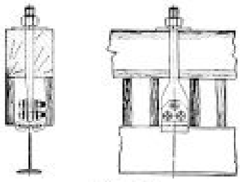


Fig. 56
Rod Hanger

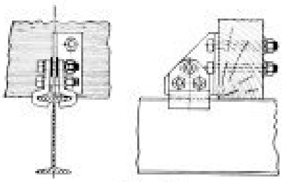


Fig. 57
Angle Hangers

IN selecting the type and size of hanger and clamp for a specific installation, it should be noted that the V-Type Hanger as shown on page 74 is the standard type of I-beam hanger.

Flat and twisted strap hangers are furnished with the same drops as shown in the table under V-type hangers and for all applications requiring the flat, twisted rod, or angle hangers, prices and specifications will be furnished on request.

In ordering hangers, specify size of I-beam, type of overhead girder, distance between supports, load to be carried, and drop between the girder and I-beam runway.

Strap Hanger.

This is a combination of two Yale Universal Hanger Clamps and a straight strap suspension member. It is used when the I-beam is hung from a parallel I-beam girder by two sets of Yale Clamps of sizes to suit the I-beams and with a connecting strap of length necessary for the desired drop.

Twisted Strap Hanger.

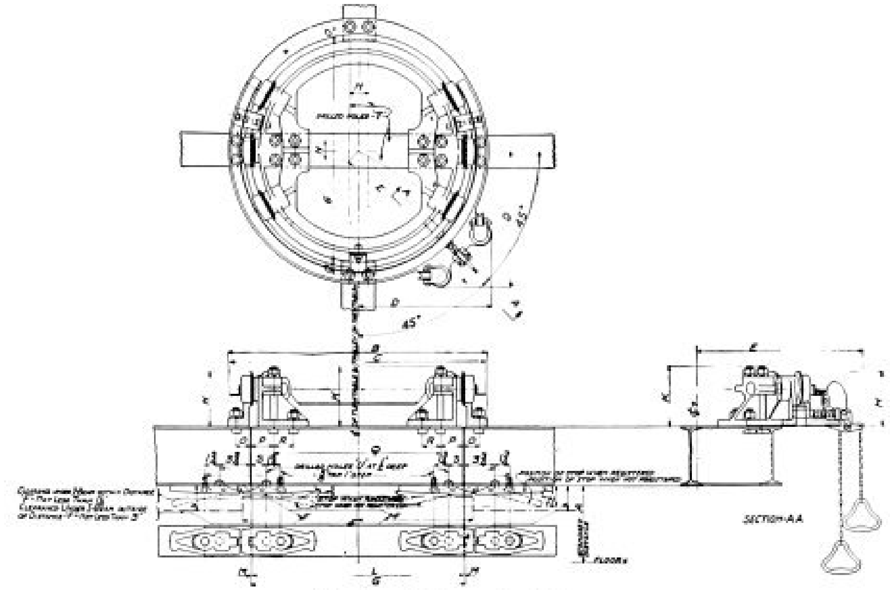
This is a combination of two Yale Universal Hanger Clamps and a suspension member, of necessary length to suit the desired drop, twisted to meet the relative position of the supported beam girder.

Rod Hangers.

This is made up of a set of Yale Universal Hanger Clamps suspended by a bolt flattened out at the head and of suitable length to pass through the supporting timber. Figure shows this type of hanger with suitable spacing blocks.

Angle Hangers.

In order to bring the I-beam flush with the supporting timber or girder a piece of angle or channel may be used in combination with a Yale Universal Hanger Clamp.



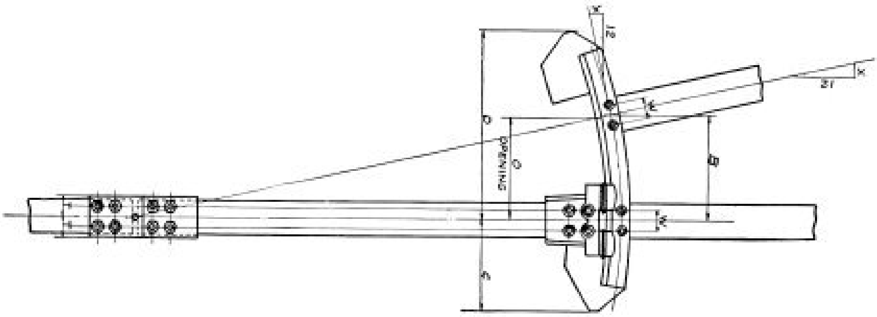
Yale Turntables

THE design of these new Yale Turntables provides for the interchangeable use of all types of Yale Plain, and Geared Trolleys and Army Type Trolley Blocks of any given capacity on one of these turntables of a corresponding capacity. These Turntables are equipped with Yale Automatic Trolley stops which prevent trolleys and trolley blocks from over-traveling when the turntable is open.

The outer housing of Yale Turntables is drilled for runway beams meeting the turntables at 90°. If the runway must meet the turntable at any angle between 45° and 90°, the drilling of the housing holes and registering pin should be done in the field.

Capacity, Tons	Type	A	B	C	D	E	F	H	K	M	N	O	P	Q	R	S	T
½	51	8′-9″	2′-4¾″	2′-5⅛″	1′-3⅛″	1′-7⅜″	1′-1″	5½″	2½″	¼″	1⅞″	1⅝″	2¼″	1′- 7″	....	1 11/16″	21/32″
1	51	8 -9	2 -4¾	2 -5⅛	1 -3⅛	1 -7⅜	1 -1	5½	2½	¼	1⅞	1⅝	2¼	1 - 7	....	1 11/16	21/32
1½	52	9 -0	2 -7½	2 -7⅛	1 -4¼	1 -8⅜	1 -2	6½	2½	5/16	2¼	1¾	2 11/16	1 - 8	....	1⅝	25/32
2	52	9 -0	2 -7½	2 -7⅛	1 -4¼	1 -8⅜	1 -2	6½	2½	5/16	2¼	1¾	2 11/16	1 - 8	....	1⅝	25/32
3	53	12 -0	2 -11	2 -9⅛	1 -4¾	1 -9⅜	1 -4	7	8¼	⅜	2¾	1¼	3½	1 -10¼	2½″	1 9/16	29/32
4	53	12 -0	2 -11	2 -9⅛	1 -4¾	1 -9⅜	1 -4	7	8¼	⅜	2¾	1¼	3½	1 -10¼	2½	1 9/16	29/32
5	53	12 -0	2 -11	2 -9⅛	1 -4¾	1 -9⅜	1 -4	7	8¼	⅜	2¾	1¼	3½	1 -10¼	2½	1 9/16	29/32

Capacity, Tons	Type	I-B'm		Wt. in lbs. less Tongue	GAP		Diameter in Inches of Drilled Holes "I"										List Prices	
		Min.	Max.		E. to E. G. Fix. B.M.S.	Lgth. L. of Tongue	5″-I	6″-I	7″-I	8″-I	9″-I	10″ -I	12″ -I	15″ -I	18″ -I	20″ -I	Without Tongue	With Tongue
½	51	5	9	190	2′-0″	1′ 11½″	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	....	....	....	....	....	$134.00	$143.00
1	51	5	9	190	2 -0	1 11½	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	....	....	....	....	....	134.00	143.00
1½	52	7	12	287	2 -2	2 1⅜	....	....	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	....	....	....	182.00	195.00
2	52	7	12	287	2 -2	2 1⅜	....	....	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	....	....	....	182.00	195.00
3	53	9	20	386	2 -6	2 5¼	....	....	....	....	1 1/16	1 1/16	1 1/16	1 5/16	1 5/16	1 5/16	218.00	244.00
4	53	9	20	386	2 -6	2 5¼	....	....	....	....	1 1/16	1 1/16	1 1/16	1 5/16	1 5/16	1 5/16	218.00	244.00
5	53	9	20	386	2 -6	2 5¼	....	....	....	....	1 1/16	1 1/16	1 1/16	1 5/16	1 5/16	1 5/16	218.00	244.00



Two and Three-Way Yale Switches

THE design of the new Yale Two and Three-Way Switches makes possible the interchangeable use of all Yale Plain and Geared Trolleys and Army Type Trolley Blocks of a given capacity on any of these switches of corresponding capacity.

These switches are designed with a roller bearing traveling end which permits free and easy movement of the fully loaded switch tongue.

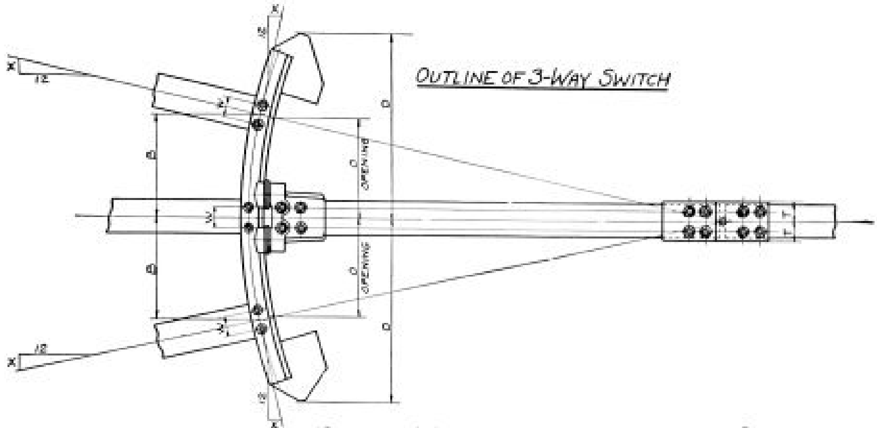
Each switch is provided with Yale Automatic Trolley Stops to prevent over-travel of the trolley or trolley block when the switch is in an open position. This safeguard prevents dropping the load from the tongue or the free end of the track.

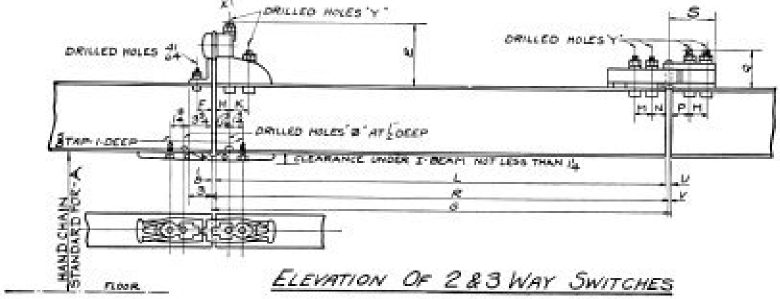
Information and Prices 2-Way and 3-Way Yale Switches

Type	Style	I-Beam		Weight Without Tongue Pounds	Gap			Opening O Inches	List Price	
		Min.	Max.		Rad "R" of Switch	E to E "G" Fix. BMS.	Length "L" of Tongue		Without Tongues	With Tongues
162	2-way	5	9	88	4 ft.-6 in.	4 ft.-0 3/16 in.	4 ft.-5 11/16 in.	10	$ 73.00	$ 86.00
164	2-way	7	12	117	5 " -6 "	5 " -6 3/32 "	5 "- 5 11/16 "	12½	103.00	124.00
166	2-way	9	18	200	5 " -0 "	5 " -0 3/16 "	4 "-11 3/16 "	13	146.00	171.00
168	2-way	12	24	299	8 " -0 "	8 " -0 1/4 "	7 "-11 5/8 "	14	194.00	231.00
161	3-way	5	9	98	4 " -6 "	4 " -0 3/16 "	4 "- 5 11/16 "	10	85.00	98.00
163	3-way	7	12	133	5 " -6 "	5 " -0 3/32 "	5 "- 5 11/16 "	12½	117.00	136.00
165	3-way	9	18	223	5 " -0 "	5 " -0 3/16 "	4 "-11 3/16 "	13	158.00	183.00
167	3-way	12	24	326	8 " -0 "	8 " -0 1/4 "	7 "-11 5/8 "	14	218.00	255.00

NOTE—Weights given are for switch exclusive of I-beam tongue.

YALE I-BEAM TROLLEY TRACK




DRILLED HOLES 'Y'
DRILLED HOLES 41/64
E
F H K
DRILLED HOLES 'Z' AT ½ DEEP
⅝ TAP-1-DEEP
CLEARANCE UNDER I-BEAM NOT LESS THAN 1¼
L
R
S
U
V
HAND CHAIN STANDARD FOR-A
FLOOR
G
M N P M
ELEVATION OF 2 & 3 WAY SWITCHES

Dimensions in Feet and Inches

Type	Style	A	B	C	D	E	F	H	K	M	N	P	Q	S	T	U	V	W	X	Y
162	2-way	10- 2	10 $\frac{1}{16}$	1-6	2- 3	7¼	1¾	1⅜	3⅞	...	1¾	1 $\frac{13}{32}$	3	2 $\frac{13}{16}$	1¾	⅜	$\frac{3}{16}$	1⅞	2¼	[illegible]
164	2-way	11- 0	1- 0 $\frac{31}{32}$	11	1-11	7⅜	1¾	1½	...	...	1 $\frac{11}{32}$	2 $\frac{3}{32}$	3¾	3⅛	2¼	$\frac{7}{16}$	$\frac{9}{32}$	2¼	2 $\frac{3}{32}$	[illegible]
166	2-way	13-10	1- 1 $\frac{15}{32}$	11½	1-11½	8⅛	2	2⅛	2½	2¼	1 $\frac{15}{32}$	2 $\frac{7}{16}$	5⅛	5⅞	2½	⅝	$\frac{7}{16}$	2⅝	2 $\frac{11}{32}$	[illegible]
168	2-way	17- 0	1- 2 $\frac{5}{32}$	1-1	2- 2	9¾	2	1⅞	2½	2¾	2	2¼	6¼	6¼	2¾	½	¼	2¾	1¾	1 [illegible]
161	3-way	10- 2	10 $\frac{1}{16}$	...	2- 3	7¼	1¾	1⅜	3⅞	...	1¾	1 $\frac{13}{32}$	3	2 $\frac{13}{16}$	1¾	⅜	$\frac{3}{16}$	1⅞	2¼	[illegible]
163	3-way	11- 0	1- 0 $\frac{31}{32}$	...	2- 2	7⅜	1¾	1½	...	...	1 $\frac{15}{32}$	2 $\frac{3}{32}$	3¾	3⅛	2¼	$\frac{7}{16}$	$\frac{9}{32}$	2¼	2 $\frac{3}{32}$	[illegible]
165	3-way	13-10	1- 1 $\frac{15}{32}$	...	2- 3⅝	8⅛	2	2⅛	2½	2¼	1 $\frac{15}{32}$	2 $\frac{7}{16}$	5⅛	5⅞	2½	⅝	$\frac{7}{16}$	2⅝	2 $\frac{11}{32}$	[illegible]
167	3-way	17- 0	1- 2 $\frac{5}{32}$	...	2- 5⅜	9¾	2	1⅞	2½	2¾	2	2¼	6¼	6¼	2¾	½	¼	2¾	1¾	1 [illegible]

Type	Style	Diameter in Inches of Drilled Holes—Z										
		5-I	6-I	7-I	8-I	9-I	10-I	12-I	15-I	18-I	20-I	24-I
162	2-way	...	...	...	...	...	...	...	...	...	...	...
164	2-way	...	...	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	...	...	...	...
166	2-way	...	...	...	...	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{3}{16}$	...	...
168	2-way	...	...	...	...	...	...	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{3}{16}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$
161	3-way	...	...	...	...	...	...	...	...	...	...	...
163	3-way	...	...	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	...	$\frac{3}{16}$	...	...
165	3-way	...	...	...	...	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{3}{16}$	...	...
167	3-way	...	...	...	...	...	...	1 $\frac{1}{16}$	1 $\frac{3}{16}$	1 $\frac{3}{16}$	1 $\frac{5}{16}$	1 $\frac{5}{16}$

Dimensions—A is for Plain, Geared and Cast Iron Trolleys. For Army Type use A minus 1 ft. 3 in.

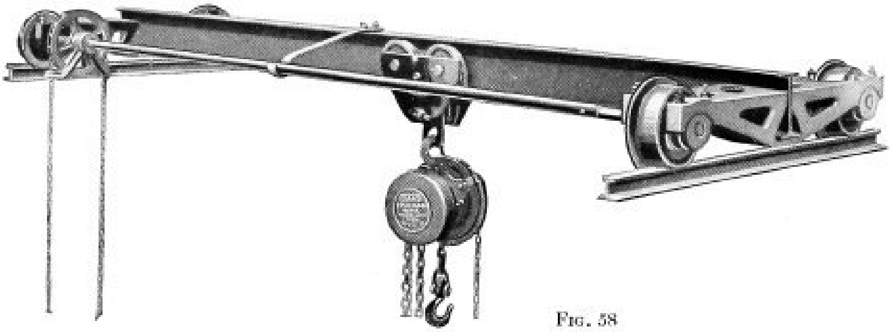


FIG. 58

Yale Hand Traveling Cranes

THE Yale Single I-Beam Hand Traveling Crane is built to give efficient operation combined with long life. The construction of this crane permits it to be used in places where very limited headroom is available. The Crane consists of a single I-beam supported at each end on a patented truck frame of cast steel. The I-beam is of standard size, sufficient for the required capacity and span.

An unusual safety feature is provided by the method of supporting the I-beam bridge in the crane end. The bridge member extends over the runway at each end ¾ inches above the track.

The lower flange of the I-beam serves as a track for the trolley with the load, as shown above.

The Yale patented crane end (shown below) is a one-piece steel casting of light construction but with ample strength for the crane capacity. It is so designed that there are no undue strains put upon any member and the load is distributed equally to the two wheels. The I-beam rests on two bearing surfaces at the center of the crane end. It is bolted to the crane end at the top, and is also held in place by a dowel which fits into a small recess on the under side of the bottom flange of I-beam. The wheels are so constructed that they will operate equally well upon I-beam, channel, or T-rail.

By means of its simple construction, the Crane can be quickly erected. As all parts are standard and kept in stock it is only necessary to order the crane ends, buy the standard I-beam of the required length from your local dealer and assemble the crane in your own shop. This procedure will save the cost of freight on the I-beam and eliminate the usual delays in shipping such a piece of equipment.

The crane ends for cranes of ¼-ton to 1-ton capacity up to 29 feet span inclusive are bored in the ends to receive

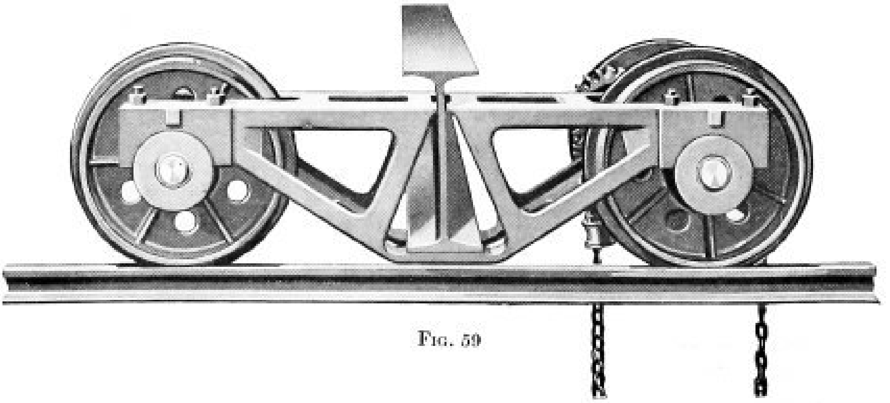


FIG. 59

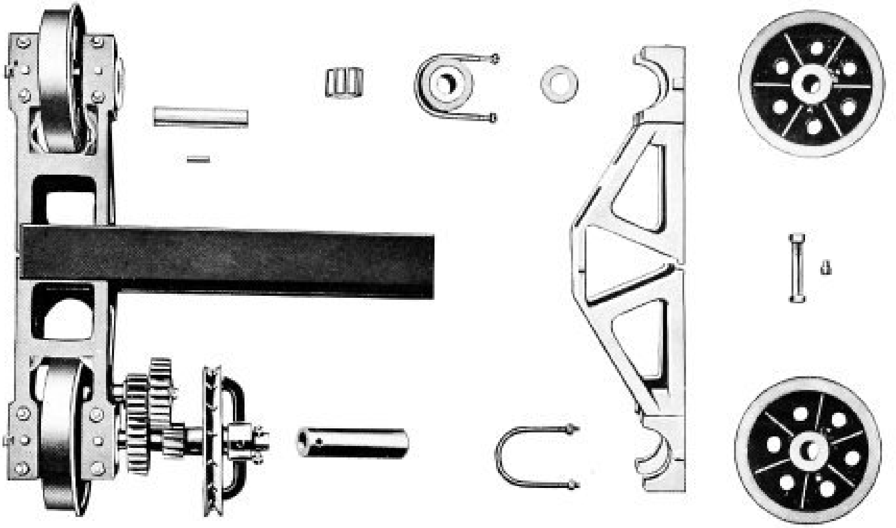


Fig. 60

Assembled and detailed views of Yale Hand Traveling Crane

the steel wheel axles and are scored to give the proper lubrication.

On cranes above 1-ton capacity and those of ¼-ton to 1-ton capacity, inclusive, with spans greater than 29 feet, the bearings with the axles and wheels are secured to the crane end by means of U-bolts and are bushed with steel roller bearings. These bearings reduce the wear on the axle to a minimum and make the operation of the crane much easier. The bearing is provided with an oil cavity which will hold an adequate supply of oil to keep the roller bearings well lubricated at all times.

A bearing on both sides of each wheel keeps it in an erect position regardless of any wheel-flange side pressure, and permits small diameter axles to be used which results in a very low frictional resistance when the crane is traveling. This also distributes evenly the wear on the bearings, which assures long life and satisfactory operation.

All cranes are equipped with squaring shaft which insures uniform travel of both truck ends, producing easier traveling and preventing undue strain.

Each truck wheel is fast on its axle, which is supported in bearings on each side of the wheel. On sizes larger than 1 ton, roller bearings are used. All bearings are provided with oil cavities.

The larger capacity cranes are equipped with hand chain and sprocket wheel. By pulling on the hand chain, the crane is propelled along the runway. The largest capacity cranes are fitted with traveling reducing gears which reduce the amount of pull required on the hand chain necessary to move the crane.

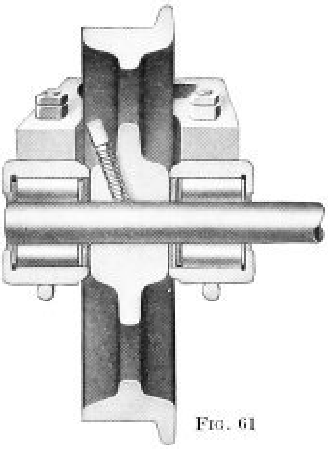
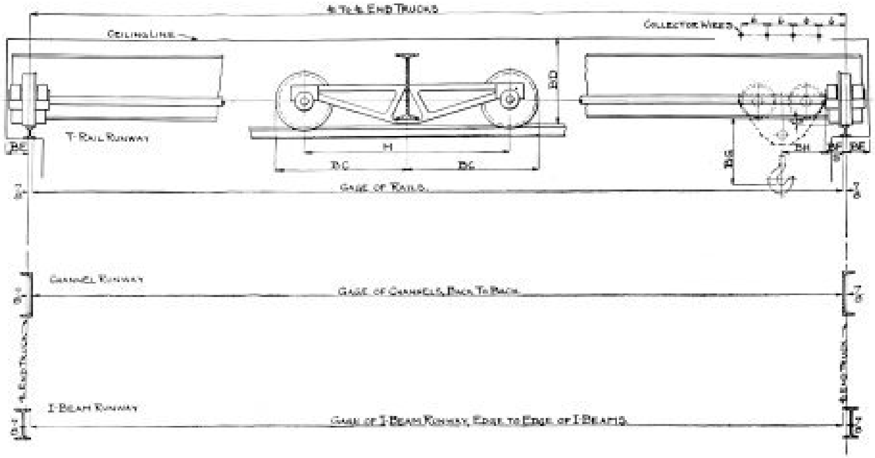


Fig. 61

Cross-section of wheel and bearings

YALE HAND TRAVELING CRANES



	Up to 11 Feet Inclusive, Center to Center Trucks					
Capacity in Tons	¼-1 Incl.	1½	2	3	4	5
Type of Crane End	B	F	F	K	S	S
Wheel Diameter in Inches	8	12	12	9	16	16
Travel Gear	12″ Plain Sprocket	18″ Plain Sprocket	18″ Plain Sprocket	12″ G'r'd Sprocket	12″ G'r'd Sprocket	12″ G'r'd Sprocket
Travel Chain Pull in Lbs.	10 to 30	41 to 55	41 to 55	23	28 to 35	28 to 35
Feet Hand Chain to Pull per Foot Travel of Crane	1.5 to 1	1.37 to 1	1.37 to 1	4.17 to 1	3.13 to 1	3.13 to 1
Size of Runway Rail	2⅜″-16 lb	2⅝″-20 lb	2⅝″-20 lb	2⅝″-20 lb	3⅛″-30 lb	3⅛″-30 lb
BC in Inches	22¾	30¾	30¾	23¼	38¾	38¾
BD* in Inches	10¾	14¾	14¾	14	23¼	23¼
BE in Inches	4½	5	5	5½	6⅛	6⅛
BF† in Inches	8½	14½	14½	14½	14¼	14¼
M in Feet	3	4	4	3	5	5

	11 Feet 1 Inch to 21 Feet Inclusive, Center to Center Trucks					
Capacity in Tons	¼-1 Incl.	1½	2	3	4	5
Type of Crane End	B	F	F	K	S	S
Wheel Diameter in Inches	8	12	12	9	16	16
Travel Gear	12″ Plain Sprocket	15″ Plain Sprocket	15″ Plain Sprocket	12″ G'r'd Sprocket	18″ G'r'd Sprocket	18″ G'r'd Sprocket
Travel Chain Pull in Lbs.	11 to 30	35 to 48	35 to 48	25	37 to 48	37 to 48
Feet Hand Chain to Pull per Foot Travel of Crane	1.5 to 1	1.37 to 1	1.37 to 1	4.17 to 1	2.75 to 1	2.75 to 1
Size of Runway Rail	2⅜″-16 lb	2⅝″-20 lb	2⅝″-20 lb	2⅝″-20 lb	3⅛″-30 lb	3⅛″-30 lb
BC in Inches	22¾	30¾	30¾	23¼	38¾	38¾
BD* in Inches	13¾	17	17	17	25¼	25¼
BE in Inches	4½	5	5	5½	6⅛	6⅛
BF† in Inches	8½	14½	14½	14½	14¼	14¼
M in Feet	3	4	4	3	5	5

***BD** is a maximum dimension and may be reduced below tabulated figures in some cases, which information we will give upon request.

If collector wires are to be installed, **BD** must be made 7 inches greater than tabulated.

†**BF** is for cranes wired for electric trolleys or hoists. This dimension is 5 inches for all hand-operated cranes with hand hoists.

YALE HAND TRAVELING CRANES

	21 Feet 1 Inch to 29 Feet Inclusive, Center to Center Trucks					
Capacity in Tons	¼ to 1 incl.	1½	2	3	4	5
Type of Crane End	X	F	F	M	S	S
Wheel Diameter in Inches	10	12	12	12	14	14
Travel Gear	15" Plain Sprocket	18" Plain Sprocket	18" Plain Sprocket	12" G'r'd Sprocket	18" G'r'd Sprocket	18" G'r'd Sprocket
Travel Chain Pull in Lbs.	15 to 38	42 to 55	42 to 55	35	33 to 41	33 to 41
Feet Hand Chain to Pull per Foot Travel of Crane	1.25 to 1	1.37 to 1	1.37 to 1	3.22 to 1	4.32 to 1	4.32 to 1
Size of Runway Rail	2⅜"-16 lb	2⅝"-20 lb	2⅝"-20 lb	2⅝"-20 lb	3⅛"-30 lb	3⅛"-30 lb
BC in Inches	35¾	30¾	30¾	30¾	38¾	38¾
BD* in Inches	17	20	20	20¼	25¼	25¼
BE in Inches	4¾	5	5	5½	6⅛	6⅛
BF† in Inches	8½	14	14	14	14¼	14¼
M in Feet	5	4	4	4	5	5

	29 Feet 1 Inch to 37 Feet Inclusive, Center to Center Trucks					
Capacity in Tons	¼ to 1 incl.	1½	2	3	4	5
Type of Crane End	X	N	N	N	S	S
Wheel Diameter in Inches	10	14	14	14	16	16
Travel Gear	15" Plain Sprocket	12" G'r'd Sprocket	12" G'r'd Sprocket	12" G'r'd Sprocket	18" G'r'd Sprocket	18" G'r'd Sprocket
Travel Chain Pull in Lbs.	25 to 50	27 to 32	27 to 32	43	38 to 48	38 to 48
Feet Hand Chain to Pull per Foot Travel of Crane	1.25 to 1	2.75 to 1	2.75 to 1	2.75 to 1	2.75 to 1	2.75 to 1
Size of Runway Rail	2⅜"-16 lb	2⅝"-20 lb	2⅝"-20 lb	2⅝"-20 lb	3⅛"-30 lb	3⅛"-30 lb
BC in Inches	35¾	37¾	37¾	37¾	38¾	38¾
BD* in Inches	17½	20¼	20¼	20¼	25½	25½
BE in Inches	4¾	5½	5½	5½	6⅛	6⅛
BF† in Inches	8½	13½	13½	13½	14¼	14¼
M in Feet	5	5	5	5	5	5

*__BD__ is a maximum dimension and may be reduced below tabulated figures in some cases, which information we will give upon request.

If collector wires are to be installed, **BD** must be made 7 inches greater than tabulated.

†**BF** is for cranes wired for electric trolleys or hoists. This dimension is 5 inches for all hand-operated cranes with hand hoists.

Approximate Dimensions for BG and BH

Capacity in Tons	¼	½	1	1½	2	3	4	5
BG** Inches	20	20	24	27	32	41	46	54
BH Inches	4½	5 5/16	6⅝	7¾	8½	10	11	13

**Dimensions for Yale Plain or Geared Steel-Plate Trolleys with Yale Spur-Geared Blocks hooked into suspension clevis.

YALE HAND TRAVELING CRANES

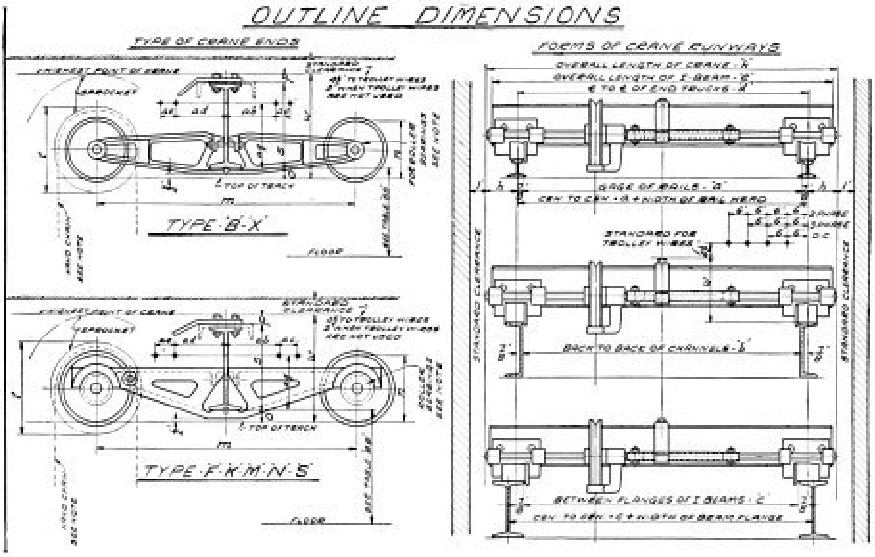

OUTLINE DIMENSIONS
TYPE OF CRANE ENDS
FORMS OF CRANE RUNWAYS
HIGHEST POINT OF CRANE
SPROCKET
STANDARD CLEARANCE
TOP OF TRACK
TYPE B-X
TYPE F-K-M-N-S
FLOOR
HAND CHAIN SEE NOTE
FOR ROLLER BEARINGS SEE NOTE
SEE TABLE BB
OVERALL LENGTH OF CRANE - K
OVERALL LENGTH OF I-BEAM - E
℄ TO ℄ OF END TRUCKS - D
GAGE OF RAILS - A
CEN TO CEN - A + WIDTH OF RAIL HEAD
STANDARD FOR TROLLEY WIRES
BACK TO BACK OF CHANNELS - B
BETWEEN FLANGES OF I BEAMS - C
CEN TO CEN - C + WIDTH OF BEAM FLANGE
STANDARD CLEARANCE

Table of Outline Dimensions

Type of Crane End		B	F	K	M	N	S	X
Gage of Rails	a	1¾" less than center to center of end trucks—d						
Back to Back of Channels	b							
Between Flanges of I-Beams	c							
C to C of End Trucks — Rail Runway	d	1¾" greater than—a						
C to C of End Trucks — Channel Runway	d	1¾" greater than—b						
C to C of End Trucks — I-Beam Runway	d	1¾" greater than—c						
Overall Length of I-Beam	e	d+5½"	d+8"	d+8"	d+8"	d+8"	d+9⅝"	d+6½"
End of Crane from center of Track	h	3½"	4"	4½"	4½"	4½"	5⅛"	3¾"
Overall Length of Crane	k	d+7"	d+8"	d+9"	d+9"	d+9"	d+10¼"	d+7½"
Wheel Base	m	3'-0"	4'-0"	3'-0"	4'-0"	5'-0"	5'-0"	5'-0"
Wheel Diameter	n	8"	12"	9"	12"	14"	16"	10"
Bottom of I-Beam Above Track	o	1½"	1½"	1½"	1½"	1½"	1⅝"	1⅝"
Top of Bracket Above Girder	p	1¼"	1½"	1¼"	1½"	1½"	1½"	1½"
Depth of Girder	s	See table of Spans and Capacities						
Diameter of Sprocket Wheel	t	12"	18"	12" Geared	12" Geared	12" Geared	18" Geared	12"
Highest Point of Crane Above Track	w	10" for 7" I & smaller. S+2¾" for 8" I & larger	15" for 12" I & smaller. S+3" for 12" I & larger	S+2¾"	S+3"	S+3"	17" for 12" I & S + 3⅛" for 15" I & larger	11" for 7" I & S + 3¼" for 8" I & larger
Pattern No. of Wheels	..	26188/11	26190/11	26189/13	26190/12	26191/12	26192/11	26087/11
Sheet No. of Detail Drawing	..	148050	148288	148289	148290	148291	148292	148293

The capacities tabulated for cranes of 3 tons or less are for hand-operated trolleys and hoists. If power-operated trolleys and hoists are to be used their extra weight must be taken into consideration in choice of crane.

Cranes of 4 tons capacity and over are rated for use with electric trolleys and hoists.

When hoists are ordered other than those given in Table "BB," length of chain must be computed. The order should give the distance from floor to under side of crane beam.

Length of hand chain required is double the length of the distance from floor to underside of crane beam.

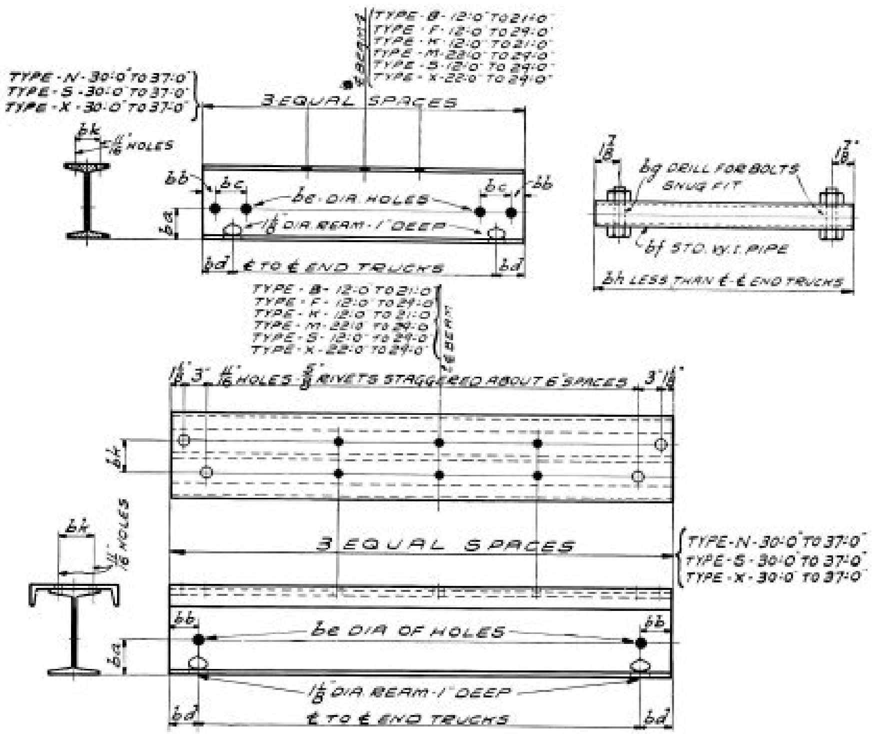
Each foot of extra hoist requires 2 feet of extra hand chain.

The type of crane is determined by the span for which it is intended. The length of span in table may include any fraction of the next higher foot.

Roller bearings can be furnished for Type "B" for which an additional charge will be made. All other types have roller bearings.

All wheel loads given in Table are for hand trolleys and hoists.

YALE HAND TRAVELING CRANES


TYPE - B - 12'-0" TO 21'-0"
TYPE - F - 12'-0" TO 29'-0"
TYPE - K - 12'-0" TO 21'-0"
TYPE - M - 22'-0" TO 29'-0"
TYPE - S - 12'-0" TO 29'-0"
TYPE - X - 22'-0" TO 29'-0"
℄ BEAM
TYPE - N - 30'-0" TO 37'-0"
TYPE - S - 30'-0" TO 37'-0"
TYPE - X - 30'-0" TO 37'-0"
3 EQUAL SPACES
bk
11/16" HOLES
bb
bc
be DIA. HOLES
ba
1 1/8" DIA. REAM - 1" DEEP
bd
℄ TO ℄ END TRUCKS
7/8"
bg DRILL FOR BOLTS SNUG FIT
bf STD. W.I. PIPE
bh LESS THAN ℄-℄ END TRUCKS
1 1/8" 3" 11/16" HOLES 5/8" RIVETS STAGGERED ABOUT 6" SPACES 3" 1 1/8"
bk
be DIA OF HOLES
1 1/8" DIA. REAM - 1" DEEP

Standard Lifts for Yale & Towne Hoist Blocks

Capacity In Tons	Type of Block				Distance from Floor to Under side of Crane Beam Supporting Standard Blocks			
	Spur-Geared	Screw-Geared	Spur-Geared Army Type	Differential	Spur-Geared	Screw-Geared	Spur-Geared Army Type	Differential
¼	8′ 0″	——	8′ 0″	6′ 0″	9′ 8″	——	8′ 10″	8′ 0″
½	8′ 0″	8′ 0″	8′ 0″	7′ 0″	9′ 8″	9′ 8″	8′ 10″	9′ 4″
1	8′ 0″	8′ 0″	8′ 0″	8′ 0″	10′ 2″	10′ 2″	9′ 0″	10′ 11″
1½	8′ 0″	8′ 0″	8′ 0″	8′ 6″	10′ 6″	10′ 7″	9′ 2″	11′ 10″
2	9′ 0″	9′ 0″	9′ 0″	9′ 0″	11′ 5″	11′ 5″	10′ 6″	13′ 0″
3	10 ′0″	10′ 0″	10′ 0″	9′ 6″	13′ 9″	13′ 2″	12′ 3″	14′ 0″
4	10′ 0″	10′ 0″	10′ 0″	——	14′ 0″	13′ 4″	12′ 6″	——
5	12′ 0″	12′ 0″	12′ 0″	——	16′ 9″	15′ 7″	15′ 2″	——

Drilling for I-Beams and Squaring Shaft Pipe—See Sketch

Type of Crane End	B	F	K	M	N	S	X
ba	3⅜″	6″	4⅜″	6⅜″	7⅜″	8⅝″	5″
bb	1⅛	4	4	4	4	4¾	1⅜
bc	3¼	——	——	——	——	——	3¾
bd	2¾	4	4	4	4	4¾	3¼
be	⅞	1	1	1	1	1⅛	⅞
bf	1¼	1½	1½	1½	1½	2	1¼
bg	⅜	⅜	½	½	½	⅝	⅜
bh	1′ 6	2′ 2	2′ 2	2′ 2	2′ 2	2′ 3	1′ 7
bk	(5″ I-1¾″)	(6″ I-2″)	(7″ I-2¼″)	(8″ I-2¼″)	(9″ I-2½″)	(10″ I-2⅝″)	(12″ I-2¾″)
	(15″ I-3″)	(18″ I-3¼″)	(20″-65.4 I-3½″)		(20″-81.4 I-4″)		

Table of Spans and Capacities

Cen. to Cen. of End Trucks Up to	Type B Crane End									Type F Crane End						Type K Crane End			Type S Crane End					
	¼-TON			½-TON			1-TON			1½-TONS			2-TONS			3-TONS			4-TONS			5-TONS		
	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load	Size I-Beam Inches and Lbs.	Total Weight	Wheel Load
6'-0"	5"×10#	270	330	5"×10#	270	540	6"×12.5#	285	955	8"×18.4#	630	1500	8"×18.4#	630	1880	9"×21.8#	625	2630	12"×31.8#	980	3525	12"×31.8#	980	4140
6'-1" to 7'-0"	5 ×10	280	335	5 ×10	280	550	6 ×12.5	295	970	8 ×18.4	645	1530	8 ×18.4	645	1955	9 ×21.8	650	2700	12 ×31.8	1065	3660	12 ×31.8	1065	4385
7'-1" to 8'-0"	5 ×10	290	340	5 ×10	290	560	6 ×12.5	305	990	8 ×18.4	660	1560	8 ×18.4	660	2030	9 ×21.8	675	2770	12 ×31.8	1150	3800	12 ×31.8	1150	4630
8'-1" to 9'-0"	5 ×10	300	350	5 ×10	300	570	6 ×12.5	320	1015	8 ×18.4	685	1595	8 ×18.4	685	2090	9 ×21.8	700	2850	12 ×31.8	1255	3935	15 ×42.9	1385	4815
9'-1" to 10'-0"	5 ×10	315	360	5 ×10	315	580	6 ×12.5	335	1040	8 ×18.4	705	1625	8 ×18.4	705	2115	9 ×21.8	725	2925	12 ×31.8	1325	4070	15 ×42.9	1430	4940
10'-1" to 11'-0"	5 ×10	330	370	5 ×10	330	595	6 ×12.5	350	1065	8 ×18.4	725	1665	8 ×18.4	725	2140	9 ×21.8	750	3000	15 ×42.9	1480	4180	18 ×54.7	1605	5065
11'-1" to 12'-0"	5 ×10	345	380	5 ×10	345	610	6 ×12.5	365	1090	8 ×18.4	750	1705	8 ×18.4	750	2170	9 ×21.8	775	3075	15 ×42.9	1550	4250	18 ×54.7	1690	5165
12'-1" to 13'-0"	6 ×12.5	380	390	6 ×12.5	380	625	6 ×12.5	380	1115	8 ×18.4	775	1730	8 ×18.4	775	2205	9 ×21.8	800	3145	15 ×42.9	1620	4320	18 ×54.7	1780	5265
13'-1" to 15'-0"	6 ×12.5	410	400	6 ×12.5	410	640	7 ×15.3	460	1145	8 ×18.4	815	1755	9 ×21.8	865	2275	10 ×25.4	900	3225	15 ×42.9	1690	4390	18 ×54.7	1870	5365
15'-1" to 17'-0"	6 ×12.5	445	410	6 ×12.5	445	655	7 ×15.3	495	1165	8 ×18.4	860	1785	9 ×21.8	915	2300	12 ×31.8	1065	3310	15 ×42.9	1755	4465	18 ×54.7	1950	5465
17'-1" to 19'-0"	6 ×12.5	480	425	7 ×15.3	530	675	8 ×18.4	585	1195	9 ×21.8	955	1825	10 ×25.4	1030	2340	12 ×31.8	1150	3345	18 ×54.7	2075	4585	20 ×65.4	2275	5595
19'-1" to 21'-0"	7 ×15.3	560	445	8 ×18.4	630	700	9 ×21.8	695	1225	10 ×25.4	1085	1865	12 ×31.8	1220	2410	12 ×31.8	1200	3385	18 ×54.7	2185	4645	20 ×65.4	2410	5665
	Type X Crane End															Type M Crane End								
21'-1" to 23'-0"	7 ×15.3	720	490	8 ×18.4	795	750	10 ×25.4	950	1300	12 ×31.8	1300	1925	12 ×31.8	1300	2435	15 ×42.9	1615	3505	9 ×13.4U 15 ×42.9I	2335	4710	20 ×65.4	2545	5735
23'-1" to 25'-0"	8 ×18.4	835	525	9 ×21.8	920	785	12 ×31.8	1165	1365	12 ×31.8	1355	1950	12 ×31.8	1355	2465	15 ×42.9	1705	3545	9 ×13.4U 15 ×42.9I	2455	4760	20 ×65.4	2685	5815
25'-1" to 27'-0"	9 ×21.8	965	555	10 ×25.4	1060	820	12 ×31.8	1245	1385	12 ×31.8	1425	1975	15 ×42.9	1725	2570	9 ×13.4U 15 ×42.9I	2150	3670	9 ×13.4U 15 ×42.9I	2575	4810	20 ×81.4	3250	5975
27'-1" to 29'-0"	10 ×25.4	1115	595	12 ×31.8	1295	885	12 ×31.8	1295	1405	15 ×42.9	1810	2075	15 ×42.9	1810	2600	9 ×13.4U 15 ×42.9I	2270	3715	9 ×13.4U 15 ×42.9I	2700	4860	20 ×81.4	3415	6040
										Type N Crane End														
29'-1" to 31'-0"	12 ×31.8	1370	665	7 ×9.8U 10 ×25.4I	1470	930	7 ×9.8U 10 ×25.4I	1470	1450	15 ×42.9	2125	2200	15 ×42.9	2125	2735	9 ×13.4U 15 ×42.9I	2535	3765	9 ×13.4U 15 ×42.9I	2820	4905	10 ×15.3U 20 ×65.4I	3565	6110
31'-1" to 33'-0"	7 ×9.8U 10 ×25.4I	1545	710	7 ×9.8U 10 ×25.4I	1545	950	7 ×9.8U 10 ×25.4I	1545	1470	15 ×42.9	2215	2225	15 ×42.9	2215	2770	9 ×13.4U 15 ×42.9I	2675	3815	10 ×15.3U 20 ×65.4I	3730	5145	10 ×15.3U 20 ×65.4I	3730	6165
33'-1" to 35'-0"	7 ×9.8U 10 ×25.4I	1615	730	7 ×9.8U 10 ×25.4I	1615	975	8 ×11.5U 12 ×31.8I	1895	1565	9 ×13.4U 15 ×42.9I	2770	2370	9 ×13.4U 15 ×42.9I	2770	2910	9 ×13.4U 15 ×42.9I	2770	3865	10 ×15.3U 20 ×65.4I	3900	5200	10 ×15.3U 20 ×65.4I	3900	6220
35'-1" to 37'-0"	8 ×11.5U 12 ×31.8I	1990	825	8 ×11.5U 12 ×31.8I	1990	1065	8 ×11.5U 12 ×31.8I	1990	1590	9 ×13.4U 15 ×42.9I	2890	2405	9 ×13.4U 15 ×42.9I	2890	2930	9 ×13.4U 15 ×42.9I	2890	3915	10 ×15.3U 20 ×65.4I	4065	5255	10 ×15.3U 20 ×65.4I	4065	6280

NOTE.—Total Weight of Crane does not include Trolley or Block. All Wheel Loads given in Table are figured when using hand trolleys and hoists.

Trolley Wire Locations for Electric Wired Cranes

System	Type of Trolley		B	F	K	M	N	S	X
2-Wire	Plain	a b	7½"	7½"	9"	9"	9"	9"	7½"
	Geared	a b	7½"	9"	9"	9"	9"	10½"	7½"
	Plain & Geared	a c	3"	3"	3"	3"	3"	3"	3"
	Plain &	a g	3"—½-Ton	5¼"—1½-Ton	6⅝"	6⅝"	6⅝"	8½"—4-Ton	3"—½-Ton
	Geared	a g	4"—1-Ton	6"—2-Ton	6⅝"	6⅝"	6⅝"	9"—5-Ton	4"—1-Ton
3-Wire	Plain	a b	7½"	7½"	9"	9"	9"	9"	7½"
	Geared	a b	7½"	9"	9"	9"	9"	10½"	7½"
	Plain & Geared	a c	3"	3"	3"	3"	3"	3"	3"
	Plain	a d	7½"	7½"	9"	9"	9"	9"	7½"
	Geared	a d	7½"	9"	9"	9"	9"	10½"	7½"
	Plain &	a g	3"—½-Ton	5¼"—1½-Ton	6⅝"	6⅝"	6⅝"	8½"—4-Ton	3"—½-Ton
	Geared	a g	4"—1-Ton	6"—2-Ton	6⅝"	6⅝"	6⅝"	9"—5-Ton	4"—1-Ton
4-Wire	Plain	a b	7½"	7½"	9"	9"	9"	9"	7½"
	Geared	a b	7½"	9"	9"	9"	9"	10½"	7½"
	Plain & Geared	a c	3"	3"	3"	3"	3"	3"	3"
	Plain	a d	7½"	7½"	9"	9"	9"	9"	7½"
	Geared	a d	7½"	9"	9"	9"	9"	10½"	7½"
	Plain & Geared	a e	3"	3"	3"	3"	3"	3"	3"
	Plain &	a g	3"—½-Ton	5¼"—1½-Ton	6⅝"	6⅝"	6⅝"	8½"—4-Ton	3"—½-Ton
	Geared	a g	4"—1-Ton	6"—2-Ton	6⅝"	6⅝"	6⅝"	9"—5-Ton	4"—1-Ton

Note: Refer to preceding pages for dimension drawings.

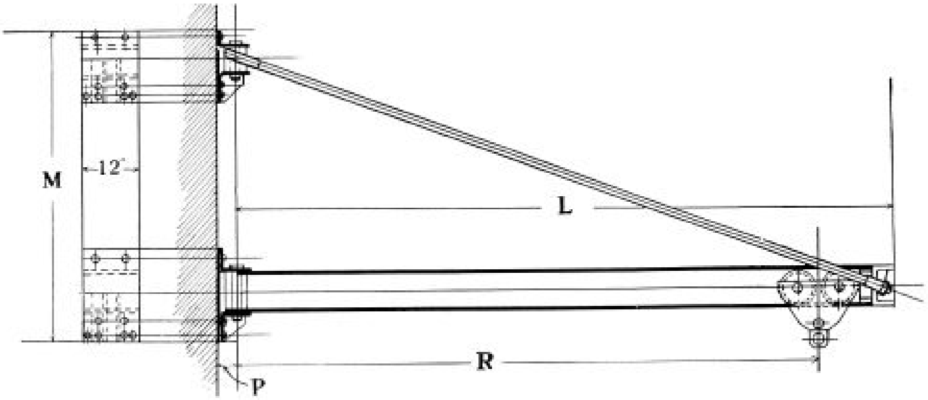
Prices—Single I-Beam Hand Traveling Crane Complete, but Without Trolley

Center to Center End Trucks	¼-Ton	½-Ton	1-Ton	1½-Ton	2-Ton	3-Ton	4-Ton	5-Ton	Add for Wiring and Crane Collectors		
									2-Wire	3-Wire	4-Wire
Up to 11 0	$206.00	$206.00	$206.00	......	......	......	......	......	$78.00	$108.00	$140.00
11' 1" to 13'	218.00	218.00	218.00	376.00	376.00	412.00	606.00	630.00	79.00	109.00	141.00
13 1 to 15	230.00	230.00	230.00	400.00	400.00	424.00	618.00	655.00	80.00	110.00	142.00
15 1 to 17	230.00	230.00	230.00	412.00	412.00	461.00	630.00	667.00	81.00	112.00	143.00
17 1 to 19	243.00	255.00	255.00	412.00	424.00	473.00	667.00	703.00	82.00	113.00	144.00
19 1 to 21	243.00	267.00	267.00	424.00	436.00	485.00	703.00	715.00	84.00	114.00	145.00
21 1 to 23	340.00	340.00	364.00	461.00	461.00	570.00	715.00	824.00	85.00	115.00	147.00
23 1 to 25	352.00	364.00	412.00	473.00	473.00	594.00	848.00	848.00	86.00	116.00	148.00
25 1 to 27	364.00	412.00	424.00	485.00	497.00	667.00	873.00	873.00	87.00	118.00	149.00
27 1 to 29	412.00	436.00	436.00	509.00	509.00	679.00	897.00	897.00	88.00	119.00	150.00
29 1 to 31	485.00	521.00	521.00	667.00	667.00	776.00	921.00	994.00	89.00	120.00	152.00
31 1 to 33	533.00	533.00	533.00	691.00	691.00	800.00	1020.00	1020.00	91.00	121.00	153.00
33 1 to 35	558.00	558.00	570.00	776.00	776.00	824.00	1043.00	1043.00	92.00	122.00	154.00
35 1 to 37	582.00	582.00	582.00	776.00	776.00	848.00	1067.00	1067.00	93.00	124.00	155.00

Boxing for Export—all sizes and spans—Extra price.

Prices—Crane Ends Only

Types	List Price	Types	List Price	Types	List Price
B	$170.00	K	$352.00	S	$509.00
F	291.00	M	388.00	X	267.00
		N	412.00		



Yale Swinging Bracket Jib Cranes

IN the handling of heavy work for several machines, and for use in connection with overhead traveling cranes in transferring loads from one crane to another in adjoining bays, this Yale Swinging Bracket Jib Crane has found wide application. The swing of the jib covers a large area, which makes it possible for the crane to handle a large amount of work.

The Yale Jib Crane can be erected on any convenient wall or post, and is never in the way of work on the floor. Its construction is simple and it can be set up by any mechanic. The adjustable tie-rods are an exceptionally good feature, as dimension "M" can be varied considerably without bending the rods.

The hinge plates will be drilled for bolting to the wall without extra charge, if a drawing is furnished showing the location of the holes; otherwise the plates will be left blank for the purchaser to drill the holes.

Information and Prices

Rated Capacity in Tons	Dimensions Feet and Inches			Size of I-beam		Weight Without Trolley Pounds	Price Without Trolley	Price Without Trolley or Beam	Price* Without Trolley, Beam or Tie-Rods
	L	R	M	In.	Lbs.				
½	11′ 1″	10′ 0″	4′ 3¼″	5	10	260	$58.00	$41.00	$29.00
½	13 7	12 6	5 0¼	5	10	300	73.00	46.00	29.00
½	16 1	15 0	5 10¼	6	12½	370	90.00	54.00	29.00
½	19 7	18 6	6 11¼	7	15.3	400	102.00	61.00	29.00
1	11 2½	10 0	4 4¼	6	12½	290	78.00	41.00	29.00
1	13 8½	12 6	5 1¼	6	12½	330	90.00	46.00	29.00
1	16 2	15 0	5 11¼	7	15.3	420	102.00	54.00	29.00
1	19 7½	18 6	7 0¼	8	18.4	550	114.00	61.00	29.00
1½	11 5½	10 0	5 2¼	8	18.4	480	114.00	80.00	58.00
1½	13 11½	12 6	5 2¼	8	18.4	540	129.00	92.00	58.00
1½	16 5½	15 0	6 2¼	8	18.4	600	134.00	107.00	58.00
1½	19 11½	18 6	7 3¼	9	21.8	770	141.00	121.00	58.00
2	11 6¾	10 0	5 2¼	8	18.4	480	114.00	80.00	58.00
2	14 0¾	12 6	5 2¼	8	18.4	540	129.00	92.00	58.00
2	16 6¾	15 0	6 3¼	9	21.8	670	134.00	107.00	58.00
2	20 0¾	18 6	7 4¼	10	25.4	840	141.00	121.00	58.00
3	11 8	10 0	5 3¼	9	21.8	520	114.00	80.00	58.00
3	14 2	12 6	5 3¼	9	21.8	620	129.00	92.00	58.00
3	16 8	15 0	6 4¼	10	25.4	730	134.00	107.00	58.00
3	19 11¾	18 6	7 6¼	12	31.8	920	141.00	121.00	58.00

*These prices cover all fittings necessary to make a complete Jib Crane with the I-beam and tie rods furnished locally, thus saving the purchaser freight costs and transportation delays.

YALE

Electric Industrial Trucks

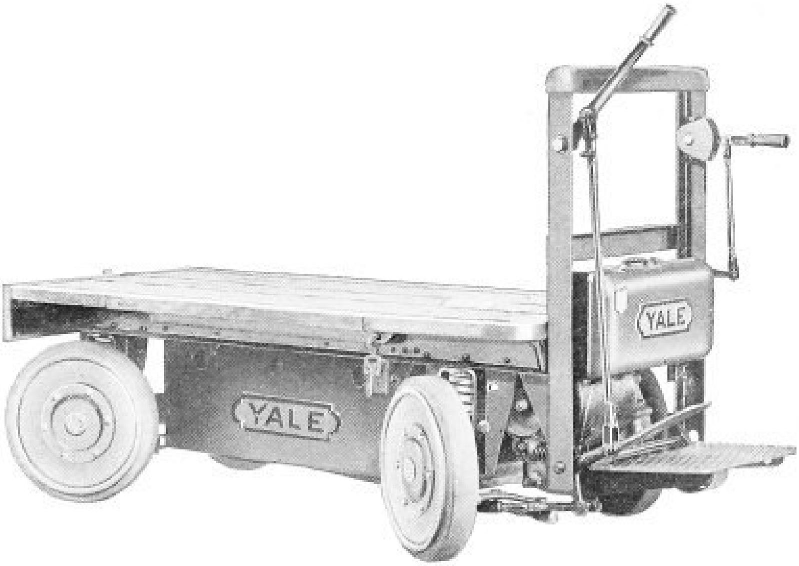
THE addition, some years ago, of Industrial Trucks and Tractors to the Yale line of Chain Blocks, Electric Hoists, and Overhead I-beam Trolley systems, was a natural expansion in the development of a complete line of Material Handling Equipment.

The K series of Yale Industrial Trucks is the result of many years' experience in the design and construction of this type of vehicle. They are built in strict accordance with the best practice of automotive engineering, and have established a new standard of efficiency and economy in industrial truck transportation units.

In these Trucks, channel iron frames have given place to frames of pressed steel; a minimum number of parts, with maximum accessibility, grouped into self-contained major units, is a prominent feature; and the interchangeability of a majority of single parts, and unit assemblies, between all types of K trucks, are prominent features in design.

Finally, auxiliary equipment, and standardized self-loading devices, round out a complete line of Industrial Trucks and Tractors.

The following pages contain only a general outline of Yale Trucks, Tractor, Trailer, and Auxiliary Equipment. Complete details of this equipment are contained in the Yale Electric Industrial Truck Catalog, a copy of which will gladly be sent to all interested persons upon request.



Yale K20 Narrow High Platform Truck

THIS model meets the general requirements of economical intraplant movement of material. The installation of each Yale Model K20 Truck releases from three to eight men from the nonproductive work of manual handling for jobs of a more profitable nature.

This Truck handles miscellaneous units of material which can be placed on the platform by hand, by chain block, electric hoist, ship's tackle, or overhead crane service. Auxiliary equipment designed for it includes a gravity dump body for handling loose material and an electrically operated swinging boom crane.

Large wheels and full spring suspension permit efficient operation over rough surfaces, while ease of control reduces handling costs in narrow aisles and congested spaces.

The design includes a minimum number of parts, having a maximum accessibility, and grouped into self-contained major units. From the simple cotter pin to the complete vehicle there is "built in" that high quality and long service which has made the name "Yale" synonymous with the highest standards of mechanical excellence.

The use of pressed steel unit frames and the strict adherence to the best practice of automotive engineering in all details add greatly to the value of this manufactured product.

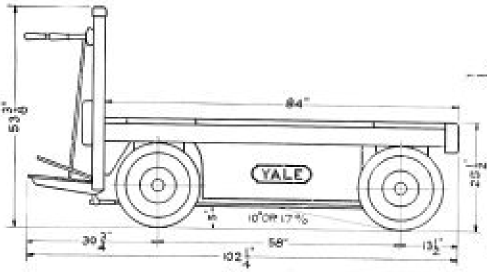
The Yale Spur-Geared Power Axle shows remarkable efficiencies throughout the operating range. Heat-treated alloy steels and ball bearings, protected from dirt and properly lubricated, insure long life. Simplicity of construction decreases overhaul and maintenance expense.

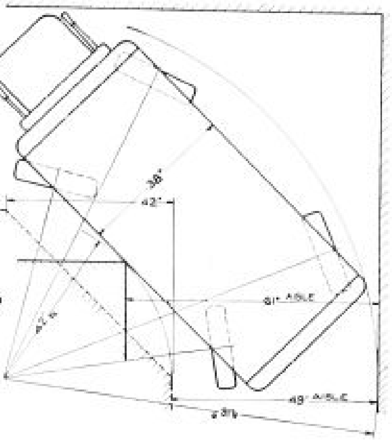
The driving mechanism is a double-reduction, spur-gear, totally enclosed, splash lubricated, readily removable unit, built into a rigid, steel housing carrying a driving wheel on both ends.

The control of this machine follows Yale standards of safety, and is simple, positive, and direct in connecting the operator with the operating part. The design, construction and materials of the Yale Controller insure durability and efficiency under the most severe working conditions.

The majority of single parts and unit assemblies in this Truck are standard and interchangeable with those of all other K-model Yale Industrial Trucks. Where two or more different Yale K-model Trucks are used in one plant, this interchangeability offers definite operating advantages and economies.

Model K21.—The same as the K20, but with a platform 46 inches wide.





Yale K20 Truck Specifications

CAPACITY

Platform Load	4000 lbs.

WEIGHTS

Truck less battery	1660 lbs.
Truck with Exide battery	2300 lbs.
Truck with Edison battery	2135 lbs.

DIMENSIONS

Wheel Base	58 in.
Wheel Tread	33 3/4 in.
Length Overall	102 1/4 in.
Width Overall	38 in.
Height Overall	53 3/8 in.
Platform Space, Length 84 in., Width 38 in.	22 sq. ft.
Platform Height	25 1/2 in.
Ground Clearance	5 in.

STEERING

Turning radius outside edge of truck	91 in.
Turning radius inside edge of truck	42 in.
Min. width of intersecting aisles for 90-degree turn	49 in.

Four-wheel steer—Hand lever, vertical movement control.

Hardened and ground steel pins with bronze bushings at all bearing points.

ELECTRIC EQUIPMENT

Motor—Series-wound, totally enclosed, [24-36V.]

Battery	Exide Ironclad or Edison.

Controller—Yale drum type with renewable arcing contact and cutout switch. Three speeds forward and three reverse.

Wiring	No. 2 rubber-covered, acid-proof.

Battery Connector—Yale, quick-detachable type.

Resistor	Yale, cast grid type.

Charging Plug—Yale, quick-detachable type same as battery connector.

SPEED

Speed, empty on level concrete	Max., 8 1/2 mi. hr.
Speed, 4000 lb. load, on level concrete	Max., 6 mi. hr.
Speed, up 10% grade, 4000 lb. load	Max., 2 1/4 mi. hr.
Acceleration	4000 lb. load, full speed in 60 ft.

STRUCTURAL

Frame—Pressed steel with integral battery box.

Drive Unit—Double reduction spur gear, 18.7 to 1, running in oil and mounted on ball bearings. Full floating axle shafts, driving wheels through enclosed universal ball joints.

Wheels	Pressed steel, disc type.

Wheel Bearings—Single, deep groove type, ball bearing.

Tires	Solid rubber, 20" x 3 1/2", pressed on.

Springs—Four helical springs, max. deflection, 2".

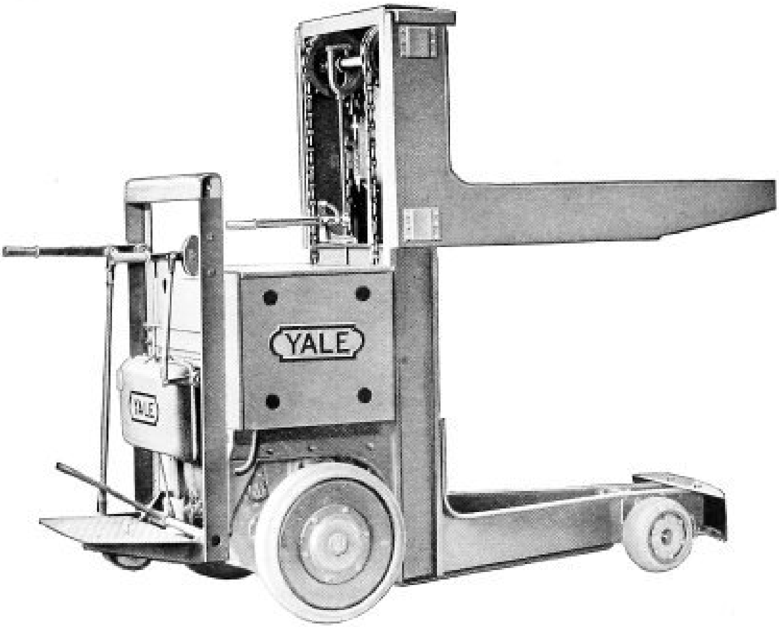
Brake—External contracting double shoe type on motor shaft, operated by foot lever directly connected to cut out switch.

Platform—1 1/2 in. ship-lap oak with steel wear strips, hinged over battery compartment.

GENERAL

Lubrication	High pressure, grease gun.
Warning Signal	Yale gong, foot-operated plunger.
Coupler	Yale pin and socket type.
Bumper	Pressed steel end cross member.

Yale Lock—On Controller, prevents unauthorized operation of truck.



Yale K22 Elevating Platform Truck

THIS model is a self-loading transportation unit, combining the advantages of high and low lifting. It has so many possible intraplant applications that a simple arrangement of the movement of materials will keep it working constantly.

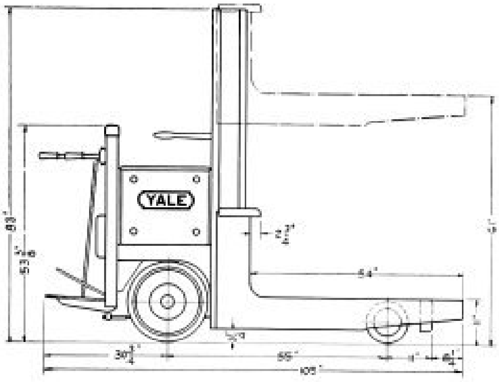
The K22 Truck shows remarkable operating economies. It is used to lift loaded skids from the floor, transport them to a given place and raise them to such a height that the cost of stacking or tiering in storeroom, freight car, steamship hold, etc., is reduced to a minimum. The time taken to load and unload this truck as compared with that required by other types of trucks, is practically nothing. Its low center of gravity and pressed steel, one-piece main longitudinal frame members admit of its carrying a 4000-pound load with safety.

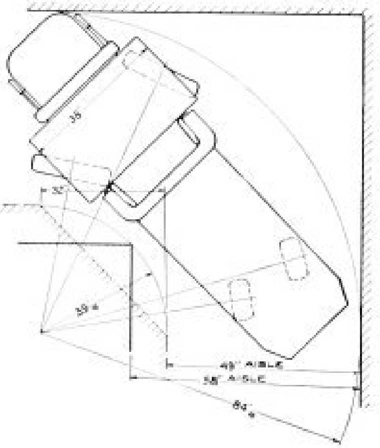
The Yale & Towne Mfg. Co., were the pioneers in the manufacture of chain hoists, and the experience of fifty years is embodied in this, the latest Yale hoisting development. The platform of the Yale K22 Truck is raised and lowered on 2 standard, Yale 2-ton hoist chains, attached by adjustable, forged steel brackets to the platform, and actuated through steel, pocket sheave wheels by an electric, triple-reduction, spur-gear, totally enclosed, splash lubricated, readily removable hoisting unit. Mechanically governed lowering-speed control, and automatic upper, and lower limit stops, assure simple, and safe operation.

One of the notable achievements in this new line of trucks is the Yale Spur-Geared Power Axle. Heat-treated alloy steels and properly lubricated ball bearings, protected from dirt, ensure long life. Simplicity of construction decreases overhaul and maintenance expense.

The control unit of this truck is simple, positive and direct in connecting the operator with the operating part, following Yale standards of safety. The Controller used is the same durable and highly efficient unit, Yale-designed and Yale built, used on all Yale Electric Industrial Trucks.

In keeping with the fundamental principle of design, the majority of Yale K22 Truck parts are standard and interchangeable with those of all other models in this series.





Yale K22 Truck Specifications

CAPACITY

Platform Load	4000 lbs.

WEIGHTS

Truck less battery	2660 lbs.
Truck with Exide battery	3500 lbs.
Truck with Edison battery	3135 lbs.

DIMENSIONS

Wheel Base	55 in.
Wheel Tread—Front	33¾ in.
—Rear	16¾ in.
Length Overall	105 in.
Height Overall	83 in.
Platform Length	54 in.
Platform Height—Low position	11 in.
—High position	61 in.
Ground Clearance	3¼ in.

STEERING

Turning radius outside edge of truck	84 in.
Turning radius inside edge of truck	35 in.
Intersecting aisles	58 in.

Four-wheel Steer — Hand lever with vertical movement. Hardened and ground steel pins and bronze bushings at all bearing points.

ELECTRICAL

Drive Motor—Series-wound, totally enclosed. [24-36V.]

Hoist Motor—Series-wound, totally enclosed. Battery Exide Ironclad or Edison.

Main Controller—Yale drum type with renewable arcing contact and cut-out switch. Three speeds forward and three reverse.

Hoist Controller—Yale drum type with automatic throw-out when platform reaches high or low position.

Wiring No. 2 rubber covered, acid-proof.

Battery Connector—Yale quick-detachable type.

Resistor Yale cast grid type.

Charging Plug—Yale quick-detachable type, same as battery connector.

STRUCTURAL

Frame—Pressed steel, main longitudinal members, one piece.

Drive Unit—Double reduction, spur-gear, 18.7 to 1, mounted on ball bearings. Full floating axle shaft driving wheels through enclosed ball joints.

Hoist Unit—Triple reduction, spur-gear, 105 to 1, enclosed in housing, driving standard, Yale 2 ton hoist chain over steel sheaves.

Wheels Pressed steel, disc type.

Wheel Bearings—Single deep groove type ball bearing.

Tires—solid rubber, 20" x 3½" front wheels, 10½" x 5" rear wheels, pressed on type.

Springs—Two helical coiled springs on front end, maximum deflection 2 in.

Brake—External contracting double shoe type on motor shaft.

Brake on Hoist Mechanism—External contracting double shoe type on motor shaft, interconnected with hoist controller.

SPEED

Speed, empty, level concrete, Max., 8 mi. per hr.

Speed loaded, 4000 lbs., level concrete Max., 6 mi. per hr.

Speed, up 10% grade, 4000 lbs. load Max., 2 mi. per hr.

Acceleration—4,000 lb. load. Full speed in 70 feet.

Hoisting speed, empty, 4½ in. per sec.

Hoisting speed, loaded, 4000 lbs. Max., 2 in. per sec.

Lowering speed, all loads, 4¾ in. per sec. maximum; controlled by centrifugal brake.

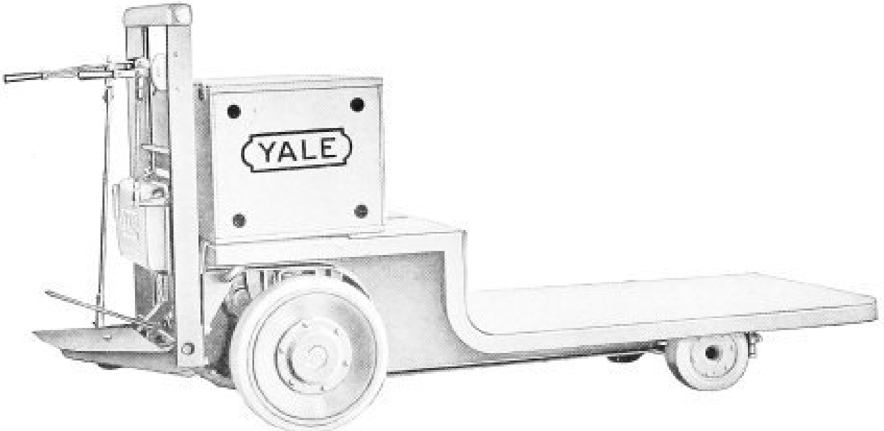
GENERAL

Lubrication High pressure, grease gun.

Alarm Signal—Yale gong, foot-operated plunger.

Coupler Yale pin and socket type.

Yale Lock—On Controller, prevents unauthorized operation of truck.



Yale K23 Low Platform Truck

THIS is a general utility truck which finds its application in plants and shops where loads of a miscellaneous character must be economically moved. The low platform reduces lifting to a minimum, making it easier to pile heavy loads on the truck either by hand or auxiliary crane equipment.

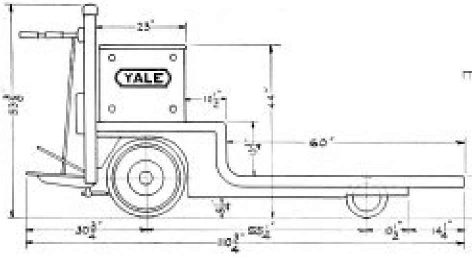
The K23 Truck is ideal where the road surface is in average good condition. It has been shown many times that where the traffic is heavy enough, the laying of concrete runways will pay for itself in a short time from the gain made by improved truck efficiency combined with increased loading and unloading efficiencies obtained by the use of this type of truck. It may be stated as an axiom that good runways always pay for themselves by decreasing hauling costs.

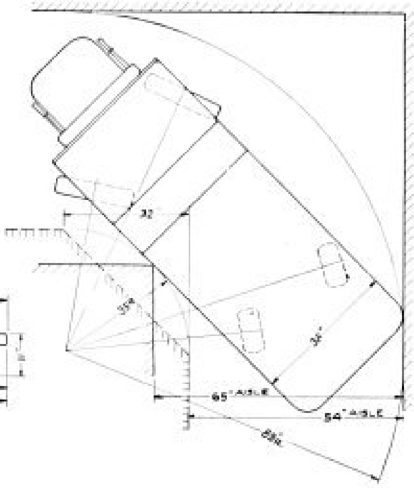
In keeping with the standards of design adopted for this line of trucks, the K23 has a minimum number of parts with maximum accessibility grouped into self-contained major units.

The control of this truck, like that of all other K Trucks, is simple, positive and direct in connecting the operator with the operating part—in keeping with the Yale standards of safety. This subassembly is interchangeable with all of the other K Trucks, except the K24 Three-Wheel Tractor-Truck. The Controller unit is Yale designed and built and is standard on all of the trucks of this new series.

The Yale Spur-Geared Power Axle used in this Truck is identical and interchangeable with that used in all trucks of the K series. It shows remarkable efficiencies throughout the operating range. Heat-treated alloy steels and ball bearings protected from dirt and properly lubricated insure long life. Simplicity of construction decreases overhaul and maintenance expense. The driving mechanism is a double-reduction, spur-gear, totally enclosed, splash-lubricated, readily removable unit, built into a rigid, steel housing carrying a driving wheel on both ends.

The principle of interchangeability is carried out in this, as in all of the K series trucks. Because of the high degree of interchangeability of parts, units and sub-assemblies, definite manufacturing and operating advantages and economies are obtainable which have established a new standard of value in industrial truck transportation systems.





Yale K23 Truck Specifications

CAPACITY

Platform Load	4000 lbs.

WEIGHTS

Truck less battery	1670 lbs.
Truck with Exide battery	2510 lbs.
Truck with Edison battery	2145 lbs.

DIMENSIONS

Wheel Base	55¼ in.
Wheel Tread	33¾ in.
Length Overall	110¾ in.
Width Overall	38 in.
Height Overall	53⅜ in.
Platform Space, Length 60 in., Width 38 in., Space	16 sq. ft.
Platform Height	11 in.
Ground Clearance	5 in.

STEERING

Turning radius outside edge of truck	89 in.
Turning radius inside edge of truck	35 in.
Intersecting aisles	65 in.

Four-wheel steer—Hand lever with vertical movement.

Hardened and ground steel pins and bronze bushings at all bearing points.

ELECTRICAL

Motor—Series-wound, totally enclosed, [24-36V.]

Battery	Exide Ironclad or Edison.

Controller—Yale drum type with renewable arcing contact and cutout switch. Three speeds forward and three reverse.

Wiring	No. 2 rubber covered acid-proof.

Battery Connector—Yale quick-detachable type.

Resistor	Yale cast grid type.

Charging Plug—Yale quick-detachable type, same as battery connector.

STRUCTURAL

Frame—Pressed steel—main longitudinal members, one piece.

Drive Unit—Double reduction, spur-gear, 18.7 to 1, mounted on ball bearings. Full floating axle shafts driving wheels through enclosed universal ball joints.

Wheels	Pressed steel, disc type.

Wheel Bearings—Single, deep groove type—ball bearing.

Tires—Solid rubber, 20" x 3½" front wheels, 10½" x 5" rear wheels, pressed-on type.

Springs—Two helical coiled springs on front end. Max. deflection 2 in.

Brake—External contracting double shoe type on motor shaft, operated by foot lever, also opening cut-out switch.

SPEED

Empty, level concrete	Max., 8 mi. per hr.
Loaded, 4000 lbs., level concrete	Max., 6 mi. per hr.
Loaded, 4000 lbs., up 10% grade	Max., 2 mi. per hr.

Acceleration, 4000 lbs. load—full speed in 60 ft.

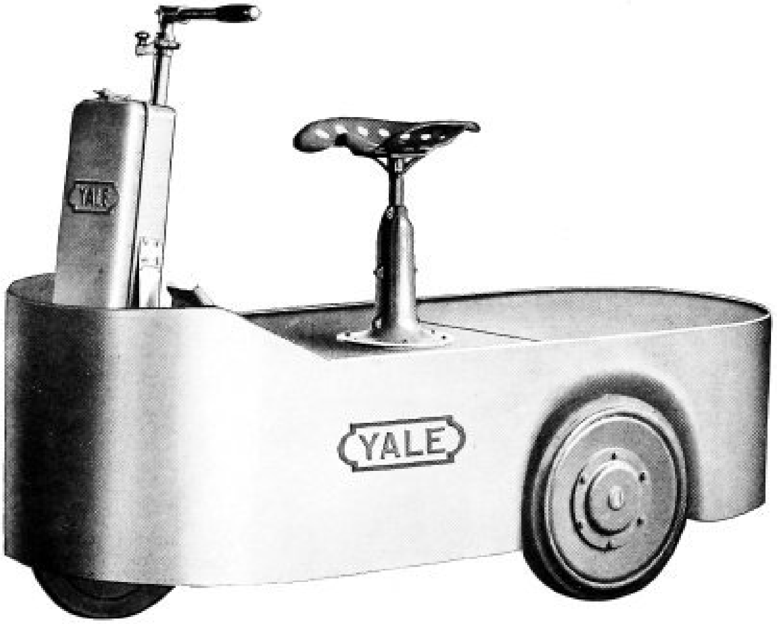
GENERAL

Lubrication	High pressure grease gun.

Alarm Signal—Yale gong, foot-operated plunger.

Coupler	Yale pin and socket type.

Yale Lock—On Controller, prevents unauthorized operation of truck.



Yale K24 Three-Wheel Tractor-Truck

THIS model meets the requirements of the average three-wheel tractor job, and is particularly efficient as a small load-carrying truck for service in the most congested spaces. Its platform area of 15 square feet is 70 per cent of that of the Model K20 Load-Carrying Truck, yet the machine passes a three-foot doorway, or a seven-foot elevator.

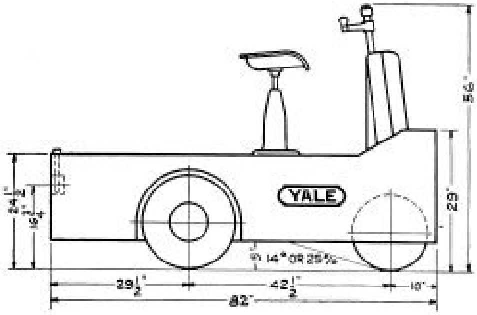
The low center of gravity of this machine is a notable achievement for safety of operation. The common occurrences of "bucking" or overturning against stalling loads, or tipping over sidewise while rounding a corner, are eliminated.

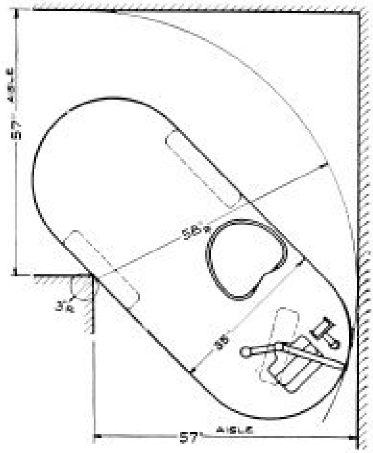
The arc-welded frame of heavy pressed steel combines all necessary parts, including battery compartment, bumpers, deck, etc., in a solid and rugged one-piece structure. The frame is suspended on helical springs over each wheel. The seat, which is further protected by an additional spring, is of the swivel type. This enables the operator to get on and off the machine with greater facility, and to look or reach back to the coupling point. The clear deck gives him perfect vision to the drawbar, which is so necessary for safe and efficient operation. The model includes a minimum number of parts, having a maximum accessibility, and grouped into self-contained major units.

The Yale Spur-Geared Power Axle is the same as that used in the other K models, except that the wheel bearings are rigidly mounted on the ends of the housing.

Its remarkable operating efficiencies and long life are due to its highly scientific design and construction.

The control of this machine, although different from that in the other models, follows Yale standards of safety, and is simple, positive, and direct, in connecting the operator with the operating part. The controller handle is directly connected by a spur-gear to the controller drum, and has the "Z"-slot neutral stop. The steering handle is rigidly mounted on top of the steering column. The single brake pedal may be readily locked down by throwing a button with the other foot. The design, construction, and materials of the Yale Controller insure durability and efficiency under the most severe service conditions.





Yale K24 Tractor-Truck Specifications

CAPACITY

Drawbar pull, normal	300 lbs.
maximum	1800 lbs.
Platform Load	3000 lbs.

WEIGHTS

Tractor less battery	1600 lbs.
Tractor with Exide battery	2440 lbs.
Tractor with Edison battery	2075 lbs.

DIMENSIONS

Wheel Base	42½ in.
Wheel Tread	31¾ in.
Length Overall	82 in.
Width Overall	35 in.
Height Overall	56 in.
Platform Space	15½ sq. ft.
Platform Height	24½ in.
Ground Clearance	5 in.

STEERING

Turning radius outside edge of tractor	58 in.
Turning radius inside edge of tractor	3 in.
Intersecting aisles	57 in.

Horizontal lever directly connected to fork of front wheel.

ELECTRICAL

Motor—Series-wound, totally enclosed, [24-36V.]

Battery Exide Ironclad, Edison.

Controller—Yale drum type with renewable arcing contact and cut-out switch.

Wiring No. 2 rubber covered acid-proof.

Battery Connector—Yale quick-detachable type.

Resistor Yale cast grid type.

Charging Plug—Yale quick-detachable type same as battery connector.

SPEED

Speed—Empty, level concrete Max., 8½ mi. hr.

Speed Total trailer load of 16,000 lbs., level concrete, Max., 3½ mi. hr.

Speed—Up 10% grade, Total trailer load 10,000 lbs. Max., 1½ mi. hr.

Acceleration—4,000 lb. load. Full speed in 60 feet.

STRUCTURAL

Frame—Pressed steel, formed by bumper plates and battery container welded to form one solid unit.

Drive Unit—Double reduction spur-gear, 18.7 to 1, running in oil and mounted on ball bearings. Full floating axle shafts driving direct to wheels.

Wheels—Rear wheels, pressed steel, disc type. Front wheel semi-steel casting.

Wheel Bearings—Deep groove type ball bearings.

Tires—Solid rubber, 20" x 3½" on rear wheels, 16" x 3½" on front wheel, pressed-on type.

Springs—Three helical coiled springs, minimum deflection 2 inches.

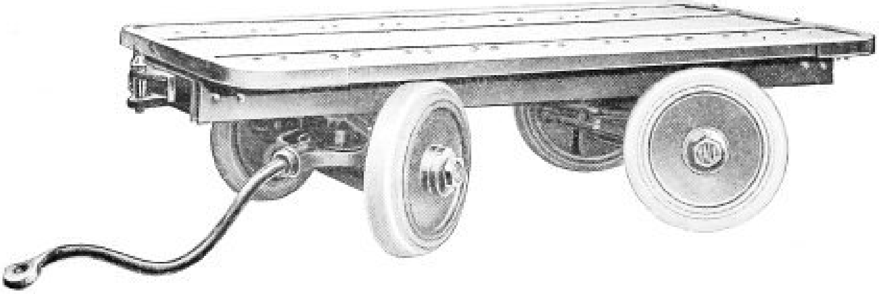
Brake—External contracting double shoe type on motor shaft, operated by foot pedal, which also opens cut-out switch.

GENERAL

Alarm Signal Yale gong, foot-operated plunger.

Coupler Yale pin and socket type.

Yale Lock—On Controller, prevents unauthorized operation of tractor.



Yale C-6-36 Trailer

THE Yale Model C-6-36 Trailer is built for the severest service, and the heaviest duty with the maximum of efficiency, and general operating economy required for such conditions. Sturdy reliability, and low draw-bar pull are the essentials of trailer design in-built by Yale.

Perfect trailing, accomplished by Yale through a properly arranged system of accurately steering all four wheels, keeps the train in line, whether straight or curved, behind the tractor.

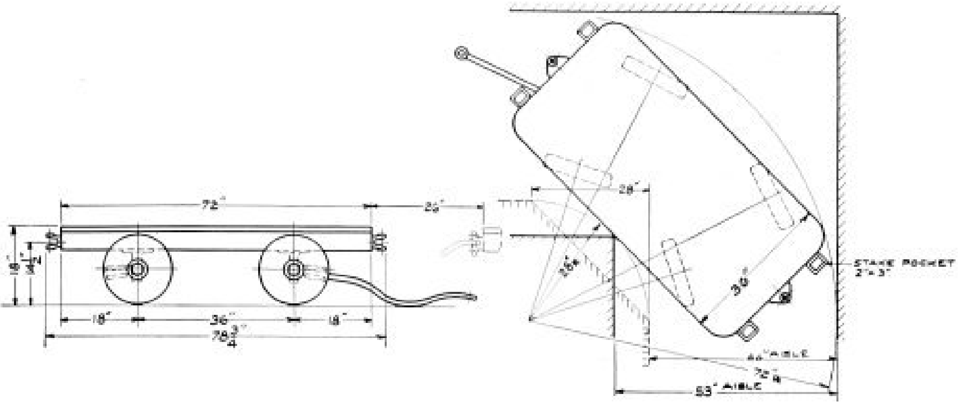
Faulty trailing or "wabbling" with heavy loads produces two big items of expense. It makes a very noticeable increase in the ampere draft and so exhausts the battery charge at a needlessly early hour in the day. It causes constant damage to both equipment and load by striking parts of buildings and other objects which the tractor cleared perfectly, and which a YALE tractor-trailer-train would clear *perfectly*.

The Yale Trailer, Model C-6-36, has a platform 36 inches wide, 72 inches long, 18 inches from the ground, with a carrying capacity of 4,000 lbs. The platform is of 1½ inch seasoned oak, constructed as a separate unit and reinforced by rounded corner angles, side angles and sub-strips riveted through the platform. Countersunk carriage bolts and two horizontal angle-irons tie the platform together which is in turn securely bolted to the Trailer chassis frame.

The frame is made up of two 4-inch longitudinal channel members which are riveted directly to the two malleable axle brackets. The steering knuckles and wheel spindles are one-piece drop forgings, fitted with heavy-duty Hyatt Roller Bearings. The malleable axle brackets are bronze bushed. The wheels are equipped with 3½ x 16 inch solid rubber tires of the pressed-on type.

An open moulded yoke casting is located on either end of the Trailer to receive the interchangeable drop forged draw-bar or steering handle.

A Yale Tractor-Trailer unit consists of one Yale K24 Tractor and sufficient Yale C-6-36 Trailers to keep one-third loading, one-third unloading and one-third in transit.



Yale C-6-36 Trailer Specifications

Capacity

Platform Load	4,000 lbs.

Weight

Weight of trailer	approx. 750 lbs.

Dimensions

Wheel Base	36 in.
Wheel Tread	28½ in.
Length Overall	78¾ in.
Height Overall	18 in.
Width Overall	36 in.

Platform Space, Length 72 in., Width 36 in., Space 18 sq. ft.

Steering

Turning radius outside edge of trailer	6 ft. 0 in.
Turning radius inside edge of trailer	2 ft. 4 in.
Turns on intersecting aisles	4 ft. 5 in.

Four-Wheel Steer—Drawbar and steering handle interchangeable at either end of Trailer.

Drawbar	diam. 1¼ in.

Steering knuckles and wheel spindle—drop forged.

Hardened and ground steel pins and bronze bushings at all bearing points.

Structural

Frame	4 in. rolled steel channel.

Platform—1½ in. oak, rounded corners, reinforced by angle irons. Top protected by $\frac{3}{16}$ in. x 2 in. metal strips.

Wheels	16 in. Cast Iron.
Wheel Bearings	Hyatt Heavy Duty Roller Bearings.

Tires, solid rubber 16" x 3½", pressed-on type.

Stake Sockets	2" x 3"
Coupling brackets	Steel Castings.
Axle brackets	Malleable iron, riveted to 4 in. steel frame.

Shipping Data

Two Trailers crated back to back
approx. net weight 1500 lbs.
approx. gross weight 2030 lbs.

One Trailer	approx. gross weight 1180 lbs.

Dimensions of crate for 2 Trailers
41" x 43" x 82"

Dimensions of crate for 1 Trailer
41" x 28" x 82"

General

Lubrication	High pressure grease gun.

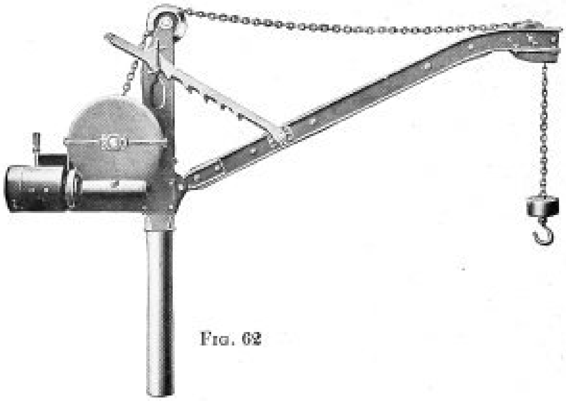


Fig. 62

Examples of Auxiliary Equipment

Yale Electric Crane

THE Yale Electric Crane may be mounted on Yale Industrial Trucks, Models K20, K21 and K23, for service where material, too heavy to be loaded by hand must be transported horizontally, the work being accomplished by a single mechanical and electrical unit, and one man.

Remote control permits the operator to make fast to his load, hold the sling on the load with one hand to prevent slipping, and turn the power on or off with the other. When load is deposited on truck platform he steps on the front end of the truck and drives away.

The crane may be installed by the owner of the truck or supplied as original factory equipment.

As a self-loading attachment for an ordinary general utility truck, the crane is arranged for instant removal when required for intermittent service. To remove crane, simply make hoisting chain fast to suitable overhead support in storage space and turn on power, which will automatically be shut off when the crane is clear of the truck.

Yale Detachable End-Dump and Side-Dump Bodies

YALE Electric Industrial Trucks can be equipped with detachable side and end-dump bodies. There are various models designed especially for use on the K20, K21, K22, and K23 trucks, and the trailers.

These dump bodies are made in five different sizes having various over-all widths, lengths and clearances with capacities for both end and side-dump bodies as follows:

14 cu. ft.—21 cu. ft.—27 cu. ft.—34 cu. ft.—40 cu. ft.

An automatic lever holds the body in a rigid position when being loaded. The weight of the material and the sloping design of the framework make the body roll into a dumping position when the lever is released.

The dumping angle of these various bodies is steep enough to completely expel any kind of loose material.

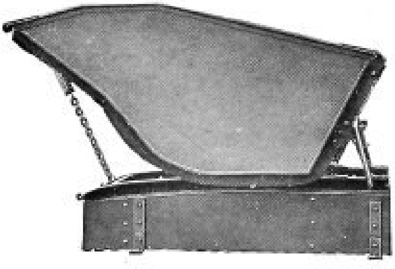


Fig. 63

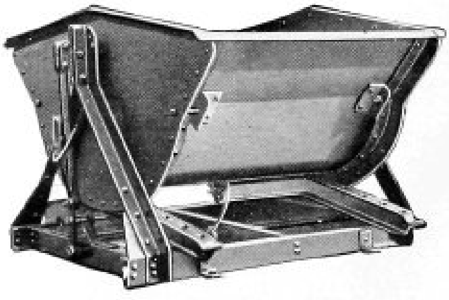


Fig. 64

YALE

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The name Yale appears on every article they make as a guarantee that they made it.

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